UNIVERSITY of NICOSIA

Course Code	Course Title	ECTS Credits
MENG-492	Capstone Design Project II	6
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	Senior Standing and Approval by the Department
Type of Course	**Field**	**Language of Instruction**
Required	Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	4th	Dr George Gregoriou
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The Capstone Design Project is taken in the 4th year of studies in two semesters: during the first semester, the course MENG-491 Capstone Design Project I (4 ECTS) and during the second semester, the course MENG-492 Capstone Design Project II (6 ECTS)

The main objectives of this course are to:

- Teach students important research techniques and practices
- Introduce students to practical engineering design
- Create the foundation where the students will have the opportunity to utilize theoretical knowledge and engineering tools/techniques acquired throughout the years in order to design, build, and test their idea in a laboratory environment
- Promote team work and practical experience in a multi-disciplinary environment
- Teach students how to write proper reports and how to present their work in front of their colleagues
- Ensure that students know how to properly set up appropriate measurement and troubleshooting procedures including proper use of laboratory equipment
- Promote engineering ethics and respect to the environment and society
- Teach students how to properly plan their activities in order to successfully achieve their design goals and, more importantly, how to meet their own deadlines

Learning Outcomes:

Upon completion of the course students are expected to:

- Use research skills on an engineering topic in order to reach a successful design for their project idea
- Operate specialized equipment and use computational/simulation tools
- Design and construct a working engineering application starting from a basic project idea and a set of constraints/specializations
- Write good technical reports and effective presentations
- Organize and schedule project activities in order to successfully complete an engineering project
- Test and troubleshoot their prototype
- Demonstrate team work and collaboration with others toward a successful completion

of a project
- Identify important principles of ethics in engineering practices

Course Contents:

Independent-type of work involving research, design, implementation, testing, and troubleshooting

Learning Activities and Teaching Methods:

Lectures/seminars and project supervision

Assessment Methods:

Progress reports, presentation, final Report

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
As needed				

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
As needed				

University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
OGEE-111	Programming for Engineers	8
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	None
Type of Course	**Field**	**Language of Instruction**
Required	Computer Science	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	1st	Dr Stelios Neophytou
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Introduce students to structured programming by means of the syntax and semantics of a structured high-level programming language.
- Provide students a good working knowledge of a programming language. This includes programming constructs such as expressions, selection statements, loops, functions and arrays.
- Provide practical experience in problem solving, coding, debugging, and testing.
- Guide the student in order to develop good programming practices.
- Obtain a foundation that will allow the student to pursue more advanced programming topics.

Learning Outcomes:

After completion of the course students should be able to:

- Deal with the practicalities of writing a computer program.
- Think and plan in a logical manner.
- Apply a structured approach to problem solving.
- Analyze and explain the behavior of simple programs involving the fundamental programming constructs.
- Modify and expand short programs that use standard conditional and iterative controls structures and functions.
- Design, implement, test and debug a program that uses each of the following fundamental programming constructs:
    - Basic computation
    - Simple I/O
    - Standard conditional and iterative structures
    - Functions
    - Arrays
- Choose appropriate conditional and iteration constructs for a given programming task.
- Apply the techniques of structured (functional) decomposition to break a program into smaller pieces.
- Describe the mechanics of parameter passing (value and reference) and write programs with actual and formal parameters.

Course Contents:

1. Program design fundamentals
    a. Problem solving, Flow charts
    b. Program structure and basic programming concepts
2. Primitive data types and declarations
    a. Input / Output
    b. Constants, Variables, Numbers
    c. Expressions, Arithmetic Statements, Standard functions
    d. Formatted output
3. Decision statements,
    a. Boolean expressions
    b. Relational operators
    c. Decision Statements
4. Repetition statements
    a. Pre-test loops
    b. Post-test loops
5. Functions and scope rules
    a. Parameter passing to functions(value and reference)
    b. Function returning values
    c. Scope and life-time of variables
6. Introduction to Arrays

Learning Activities and Teaching Methods:

Lectures, In-Class Exercises, Computer Lab exercises
The course format is 3 h lectures and 1 h laboratory tutorial session per week.

Assessment Methods:

Homework, Assignments, Lab Reports, Mid-Term, Final Exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Gary J Bronson	Program Development and Design Using C++	Thomson Course Technology	2006	0-619-21677-8

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Daniel Y. Liang	Introduction to Programming with C++	Pearson Education	2007	0-13-232049-5
Deitel & Deitel	C++ How to Program	Prentice Hall	2008	0-13-615250-7

University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
OGEE-290	Probability & Statistics for Engineers	6
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	MATH-191
Type of Course	**Field**	**Language of Instruction**
Required	Engineering	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	2nd	Dr Loizos Hadjiloizou
Mode of Delivery	**Work Placement**	**Co-requisite**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Familiarize students with the fundamental concepts of probability and statistics.
- Develop an understanding of the role of statistics with emphasis on engineering applications.
- Provide an understanding of the processes by which real-life statistical engineering and science problems are analyzed.
- Acquaint students with computer-based statistical analysis.

Learning Outcomes:

After completion of the course students are expected to be able to:

- Acquire knowledge on statistics and probability theory with emphasis on science and engineering problems.
- Develop designs and conduct experiments.
- Analyze, and evaluate statistical data using a computer software.
- Employ techniques, skills, and the modern engineering tools necessary for engineering practice.

Course Contents:

- Descriptive Statistics
- Probability Theory (Probability, Discrete and Continuous Random Variables and Probability Distributions)
- Joint Probability Distributions and Random Samples
- Point Estimation
- Statistical Intervals and Hypothesis Testing (one and two samples)
- ANOVA

Learning Activities and Teaching Methods:

Lectures, examples, discussion

Assessment Methods:

Homework, computer projects, mid-term exam, final exam.

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Jay L. Devore	Probability and Statistics for Engineering and the Sciences	Duxbury Press	2011	978-0538733526

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Richard L. Scheaffer, Madhuri Mulekar and James T. McClave	Probability and Statistics for Engineers	Cengage Learning	2010	978-0534403027

University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
PHYS-150	General Physics I	8
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	MATH-190
Type of Course	**Field**	**Language of Instruction**
Required	Science	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	1st	Dr Marios Nestoros
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Introduce students to the basic concepts of mechanics.
- Help students develop an understanding of the principles taught as well as analytical problem-solving ability.
- Consolidate the basic principles discussed in the theoretical section of the course with laboratory experiments and computer applets/simulations

Learning Outcomes:

After completion of the course students are expected to:

- Assign the correct units of measurement to physical quantities and convert from one unit of measurement to another.
- Perform addition, subtraction, dot and cross multiplication with vectors.
- Analyze the motion of a particle in one and two dimensions using the quantities of velocity, acceleration and displacement.
- Apply Newton's Laws of motion to solve problems.
- Apply the principles of conservation of energy, linear momentum and angular momentum to solve problems.
- Investigate experimentally the above laws and principles.

Course Contents:

Lectures

- Scientific Method, Fundamental Units and Measurement, Vectors
- Motion in one and two dimensions (displacement, velocity, acceleration).
- Force and Motion, Friction, Drag force
- Work and Kinetic Energy Theorem, Potential Energy, Mechanical Energy, Conservation of Mechanical Energy.
- Motion of a System of particles, Center of Mass & Linear Momentum Conservation
- Moments & Rotational Motion

Experiments and Simulations:

Selection of Experiments and simulations from: free fall, projectile motion, Newton's Laws of

Motion, statics and elasticity, conservation of mechanical energy, conservation of momentum

Learning Activities and Teaching Methods:

Lectures (3 hours/week); Experiments& Simulations (2 hours/week)

Assessment Methods:

Midterm Test, Homework, Lab Work, Final Examination

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Halliday, Resnick, Walker	Fundamentals of Physics	Wiley	8th Edition	9780470044728

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Ben Crowell	Newtonian Physics http://www.lightandmatter.com/			

University of Nicosia, Cyprus

Course Code	**Course Title**	**ECTS Credits**
PHYS-150	General Physics I	8
Department	**Semester**	**Prerequisites**
Engineering	Fall, Spring	MATH-190
Type of Course	**Field**	**Language of Instruction**
Required	Science	English
Level of Course	**Year of Study**	**Lecturer(s)**
1st Cycle	1st	Dr Marios Nestoros
Mode of Delivery	**Work Placement**	**Co-requisites**
Face-to-face	N/A	None

Objectives of the Course:

The main objectives of the course are to:

- Introduce students to the basic concepts of mechanics.
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Course Contents:

Lectures

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Experiments and Simulations:
Selection of Experiments and simulations from: free fall, projectile motion, Newton's Laws of Motion, statics and elasticity, conservation of mechanical energy, conservation of momentum

Learning Activities and Teaching Methods:

Lectures (3 hours/week); Experiments& Simulations (2 hours/week)

Assessment Methods:

Midterm Test, Homework, Lab Work, Final Examination

Required Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Halliday, Resnick, Walker	Fundamentals of Physics	Wiley	8th Edition	9780470 044728

Recommended Textbooks/Reading:

Authors	Title	Publisher	Year	ISBN
Ben Crowell	Newtonian Physics http://www.lightandmatter.com/			