a) General			
School	ENGINEERING		
Academic unit	MECHANICAL ENGINEERING		
Level of studies	Undergraduate		
Course code	MM005Y03	*Semester*	5
Course title	**Internal combustion engines I**		

Independent teaching activities	*Weekly teaching hours*	*ECTS*
Lectures	4	6
Laboratory exercises	1	

Course type	Special background
Course category	Compulsory
Prerequisite courses	-
Language of instruction and examinations	Greek
Is the course offered to Erasmus students	No
Course website (url)	http://icelab.uniwa.gr

b) Learning outcomes and general competences

b1. Learning outcomes

Upon successful completion of this course, the student will be able to:

- Understand the Internal Combustion Engine's (ICE) fundamentals and engines' classifications.
- Have basic knowledge of the main components and subsystems.
- Understand the fundamentals of the processes involved.
- Understand the technical specifications, the operation characteristics and performance charts.
- Perform simple relevant calculations.

b2. General competences

- Search for, analysis and synthesis of data and information with the use of the necessary technology
- Working independently
- Team work

c) Syllabus

Introduction. Engine types and their operation. Operating cycles (spark ignition (SI), compression ignition (CI), 2-strokes, 4-strokes, etc.). Engine design and operating parameters. Thermochemistry of fuel-air mixtures. Ideal models of engine cycles. Gas exchange processes. Mixture preparation in SI and CI engines. Combustion in SI and CI engines. Pollutant formation and control. Engine operating characteristics. Laboratory demonstrations and exercises (torque, power, specific fuel consumption measurements etc., and relevant simple calculations).

d) Teaching and learning methods - Evaluation

Delivery	Face-to-face	
Use of information and communications technology	- Multimedia applications - MS Teams/Moodle/eclass - Open courses	
Teaching methods	*Activity*	*Semester workload*
	Lectures	39

	Tutorials	13
	Laboratory exercises	13
	Computational exercises	
	Individual work	91
	Course total	156
Student performance evaluation	Final exam (80%), Laboratory exercises (20%)	

e) Suggested bibliography

1. Heywood, J.B. (2018). *Internal Combustion Engine Fundamentals*. McGraw-Hill Education.
2. Pulkrabek, W. (2016). *Τεχνικές Αρχές Μηχανών Εσωτερικής Καύσης*. Εκδόσεις Τζιόλα.
3. Ferguson, C., Kirkpatrick A. (2008). *Μηχανές Εσωτερικής Καύσης*. Εκδόσεις Γιαπούλης Σ. & Α. - Κάιζερ Χ. Ο.Ε.
4. Ρακόπουλος, Κ.Δ. (2013). *Μηχανές Εσωτερικής Καύσης Ι*. Εκδόσεις Φούντας.
5. Κλιάνης, Λ., Νικολός, Ι., Σιδέρης, Ι. (2017). *Μηχανές Εσωτερικής Καυσεως τ.Α'*. Εκδόσεις Ίδρυμα Ευγενίδου.