a) General			
School	ENGINEERING		
Academic unit	MECHANICAL ENGINEERING		
Level of studies	Undergraduate		
Course code	MM108Y03	*Semester*	8
Course title	**Internal combustion engines II**		

Independent teaching activities	*Weekly teaching hours*	*ECTS*
Lectures	5	6
Laboratory exercises		

Course type	Knowledge deepening/consolidation
Course category	Compulsory for Direction 1
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 in-depth the structure and operation of internal combustion engines (ICE).
- Perform relevant calculations
- Understand the state of the art of technology regarding, gasoline and diesel engines, emission regulations and aftertreetment technologies used.

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

Dynamics and forces of the reciprocating mechanism of internal combustion engines. Calculation of the inertia forces. Crankshaft arrangement, firing sequence and crank intervals of multicylinder engines. Balancing of free forces and moments. Study of different cylinder arrangements (i.e. V-engines). Review of the current technology trends, regarding modern GDI gasoline engines, CRDI high-speed diesel engines, emission regulations and control, aftertreetment technologies.

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	52
	Tutorials	13
	Laboratory exercises	
	Computational exercises	

	Individual work	91
	Course total	156
Student performance evaluation	Final exam (100%)	

e) Suggested bibliography

1. Heywood, J.B. (2018). *Internal Combustion Engine Fundamentals*. McGraw-Hill Education.
2. Ρακόπουλος, Κ.Δ. (2013). *Μηχανές Εσωτερικής Καύσης ΙΙ*. Εκδόσεις Φούντας.
3. Pulkrabek, W. (2016). *Τεχνικές Αρχές Μηχανών Εσωτερικής Καύσης*. Εκδόσεις Τζιόλα.
4. Ferguson, C., Kirkpatrick A. (2008). *Μηχανές Εσωτερικής Καύσης*. Εκδόσεις Γιαπούλης Σ. & Α. - Κάιζερ Χ. Ο.Ε.
5. Robert Bosch GmbH. (2018). *Bosch Automotive Handbook - 10th Edition*, John Wiley & Sons Ltd.