

COURSE ID SHEET



Course No. **5274**

NTUA

Semester:

4

Core

Elective

X

Specialization

Title:

APPLIED DIDACTICS OF NATURAL SCIENCES AND TECHNOLOGY

Aim:

Aim of the course is to acquire students with knowledge and skills than ensure them capable of designing and realizing instructional and learning processes with the help of information and communication technologies in the field of physical sciences and Technology taking into account contemporary instructional methods.

Content:

Introduction in Contemporary Pedagogics and Didactics.
 Historical overview of Didactics of Natural Sciences and Technology.
 Learning theories with applications in Natural Sciences and Technology courses.
 Architecture of instruction (Curriculum, Aim and Objectives, Instructional Design).
 Instructional methods and models (discovery learning, inquiry learning, constructivism, sociocultural approach).
 Alternative student ideas: Representations of physical world.
 Abilities of inquiry learning with assistance of experimental approach.
 Assessment of student, instruction and instructor.
 Exploitation of Information and Communication Technologies (ICT) in instructional design.
 Learning environments (Principles of design use of HTML in design, Moodle platform and asynchronous learning environment).
 Digital learning objects.
 Cooperative students' activities based on internet.
 Instructional scenario.

Hours per semester:

LECTURE	13	EXERCISES	-	LABORATORY	13	HOME-WORK	34	TOTAL HOURS: 60
---------	-----------	-----------	---	------------	-----------	-----------	-----------	------------------------

Student performance /evaluation:

Project homework-PR: Design of an instruction (teaching hours 3-5) utilizing ICT technologies (70% grade).
 Evaluation of sample instructions-SI (30% grade).
 There is an option to perform written exams (WE) instead of PR.
Final Grade = 0.7 x (PR or WE) + 0.3 x SI