UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

LASER SAFETY

Anno immatricolazione	2020/2021
Anno offerta	2021/2022
Normativa	DM270
SSD	FIS/03 (FISICA DELLA MATERIA)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	ELECTRONIC ENGINEERING
Curriculum	PERCORSO COMUNE
Anno di corso	2°
Periodo didattico	Secondo Semestre (07/03/2022 - 17/06/2022)
Crediti	6
Ore	45 ore di attività frontale
Lingua insegnamento	English
Tipo esame	SCRITTO
Docente	MILANI DANTE (titolare) - 6 CFU
Prerequisiti	Understanding of basic principles of electromagnetic theory, geometrical and wave optics.
Obiettivi formativi	The course is designed to teach the necessary knowledge and to understand the rational of laser safety. At the end of the course the students learned to classify a laser product, carry out laser risk assessment and prescribe prevention and protection measures in all work environments. The program, articulated in lectures and practical lessons, meets the training requirements for the TSL outlined by the CEI (Italian Electrotechnical Committee) and for LPA (Laser Protection Adviser) outlined by IEC International Standards.
Programma e contenuti	Basic knowledge: Laser fundamental physics and applications

	Italian laws, european directives and international standards about laser safety Biological effects of laser radiation Exposure Limit Values (ELVs) and Maximum Permissible Exposures (MPEs) Accessible Emission Levels (AELs) and classification of laser products Laser risk assessment Laser radiation collateral hazards Selecting control measures Laser guards and viewing windows Personal protective equipment Lasers in the healthcare environment Lasers in the industrial environment Expertise: Mathematical approach How to measure the laser radiation Manufacturer's requirements Protective eyewear, laser guard and viewing window choice Numerical exercises and measures Will be proposed numerical examples and measurements: Calculation of the Exposure Limit Values (ELVs) Calculation of Accessible Emission Levels (AELs) Classification of continuous and pulsed lasers Nominal Ocular Hazard Distance Protective eyewear, laser guard and viewing window choice
Metodi didattici	Lectures (hours/year in lecture theatre): 42 Practical class and measures (hours/year in lecture theatre): 6
Testi di riferimento	Laser safety laws, standards (IEC-EN-CEI, UNI) in force. Lecture notes
Modalità verifica apprendimento	Written test generally, which includes theory and numerical exercises. The sufficient students can be accept the mark gotten in the written test or they can do a oral test.
Altre informazioni	
Obiettivi Agenda 2030 per lo sviluppo sostenibile	$lbl_legenda_sviluppo_sostenibile