

Open Awards Qualification Unit



This unit forms part of a regulated qualification.

1 Unit Details

Unit Title:	Laser Safety
Unit Reference Number:	D/618/8300
Level:	3
Credit Value:	5
Minimum GLH:	30

2 Learning Outcomes and Criteria

Learning Outcome (The Learner will):	Assessment Criterion (The Learner can):
1. Understand the regulations relating to laser safety in the workplace	1.1 Explain how the Health and Safety at Work Act relates to laser safety in the workplace
	1.2 Explain the difference between hazard and risk
	1.3 Explain the difference between a chronic and an acute exposure
	1.4 Describe non-beam hazards associated with the use of lasers
	1.5 Identify the reference number of the main laser safety standard (i.e. IEC 60825, BAS EN 60825)
2. Understand the concept of the electromagnetic spectrum	2.1 Identify the wavelength of a light wave
	2.2 Describe the main bands of interest in the electromagnetic spectrum.
	2.3 Describe the difference between light emission from a natural light source and that of a laser
3. Understand the concept of beam irradiance	3.1 Explain the principal terms for optical power used in Laser Safety

	3.2	Explain the different definitions of beam diameter for a Gaussian beam
	3.3	Explain the difference between collimated and divergent beams
	3.4	Explain why divergent beams may be safer for viewing
	3.5	Explain what is meant by 'viewing aid'
	3.6	Explain the effects of viewing aids on laser beams
	3.7	Explain the differences between diffuse and direct reflection of a laser beam
4. Understand the basic physiology of the eye and laser related issues	4.1	Explain the functions of the fovea, the retina, the pupil, the lens/cornea
	4.2	Explain the implications of the blink reflex
	4.3	Explain how the accommodation distance affects laser safety
	4.4	Describe which areas of the eye is affected by different wavelengths of radiation and why
5. Understand the key concepts of laser classification	5.1	Explain the concept of MPE, AEL and NOHD
	5.2	State beam properties relevant to the classification of a laser
	5.3	Identify the classification levels used within the IEC/BS EN 60825 laser classification scheme
6. Understand the laser safety process and requirements	6.1	Use appropriate referencing tables for IEC and BS EN classification versions
	6.2	Explain when a laser safety officer should be employed
	6.3	Identify the responsibilities of a laser safety officer
	6.4	Explain how to carry out a laser safety risk assessment
7. Understand the principles of and controls for laser safety	7.1	Explain the safety principles and control measures relating to laser safety
	7.2	Explain when controls such as beam stops, enclosures and Personal Protective Equipment should be used within a laser process
	7.3	Calculate the eyewear requirements for a laser in the current BS EN standards

7.4 Explain why the alignment of a laser beam can be a particularly hazardous process

Required Equipment List

Copy of BS EN/IEC 60825-1, BS EN
Medical model for the eye or equivalent
Example laser safety goggles/eyewear
Red or green laser pointer