



Defence Awarding  
Organisation

## **Qualification Handbook**

DAO Level 5 Diploma for Mechanical and  
Electrical Draughtsman (Military  
Engineering)

**QN: 603/3180/X**

# The Qualification

## Overall Objective for the Qualifications

This handbook relates to the following qualification:

- DAO Level 5 Diploma for Mechanical and Electrical Draughtsman (Military Engineering)

This qualification provides the standards that must be achieved by individuals that are to be employed in the ME (Draughtsman E&M) trade at Class 1

## Pre-entry Requirements

Candidates must have completed a ME Class 2 (Draughtsman E&M) course

## Unit Content and Rules of Combination

This qualification is made up of a total of 14 mandatory units and 5 optional units

To be awarded this qualification the candidate must achieve a total 69 credits from the mandatory as shown in the table below.

No	Title	Level	GLH	TQT	Credit
H/615/4259	Work safely during Draughtsman tasks	2	18	20	2
M/615/7391	Plan and cost a Draughting task	5	22	28	3
T/615/7392	Project and contract management	4	24	30	3
L/615/7401	Advise on complex draughtsman tasks including capabilities and costs	4	5	7	1
R/615/7402	Supervise and mentor design trade staff	5	12	18	2
F/616/9853	Electrical Services: Power – Advanced	5	52	90	9
J/616/9854	Electrical Services: Internal Lighting - Advanced	5	32	60	6
L/616/9855	Electrical Services: External Lighting - Advanced	5	36	60	6
R/616/9856	Electrical Services: Fire Alarms - Advanced	5	24	50	5
Y/616/9857	Mechanical Services: Hot and Cold Water Services - Advanced	5	40	68	7
D/616/9858	Mechanical Services: Heating Systems - Advanced	5	52	78	8
H/616/9859	Mechanical Services: Ventilation and Air Conditioning Systems - Advanced	5	38	84	9

Y/616/9860	Mechanical Services: Water Treatment and Supply	4	12	20	2
D/616/9861	Mechanical Design: Manufacture and Repair - Advanced	4	24	60	6
	Totals		391	673	69
<b>Optional Units</b>					
A/615/4266	Use Draughtsman trade equipment	3	70	90	9
Y/615/7403	Use CAD Software	3	83	89	9
H/616/9862	Electrical Services: Intruder Alarms - Advanced	4	8	18	2
K/616/9863	Electrical Services: Airfield Lighting - Advanced	4	8	18	2
M/616/9864	Mechanical Services: Fire Protection Systems	4	12	20	2
	Totals		181	235	24

### Age Restriction

This qualification is available to learners aged 18 years and over.

### Opportunities for Progression

This qualification creates the opportunity for promotion and progression to Higher Trade Training, if selected to Clerk of Works (E) or (M)

### Exemption

No exemptions have been identified.

### Credit Transfer

Credits from identical RQF units that have already been achieved by the learner may be transferred.

### Glossary of abbreviations

2D	Two Dimensional
3D	Three Dimensional
ACoP	Approved Codes of Practice
CAD	Computer Aided Design
CAT	Cable Avoidance Tool
COSHH	Control of Substances Hazardous to Health
CPD	Continuous Professional Development
DSE	Display Screen Equipment
ICT	Information Communication Technology
PPE	Personal Protective Equipment
QC	Quality Control

# Qualification Units

URN:	H/615/4259
Title:	Work safely during Draughtsman tasks
Level:	2
Credit value:	2
GLH	18
TQT	20
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Interpret current health and safety legislation relating to trade	1.1 Identify the requirement to comply with current health and safety regulations and standards when carrying out trade tasks 1.2 Identify workplace sources of information and guidance on health and safety issues 1.3 Adhere to current trade related health and safety legislation 1.4 Comply with workplace sources of information and guidance on trade related health and safety issues
2. Determine a safe system of work	2.1 Identify hazards and risks related to the work environment 2.2 Establish health and safety requirements for trade equipment 2.3 Identify health and safety requirements for trade materials 2.4 Identify correct manual handling techniques when lifting items alone 2.5 Identify correct manual handling techniques when lifting items with assistance from others 2.6 Differentiate between the warning signage and labels for trade hazardous materials and substances 2.7 Differentiate between the uses of in service firefighting equipment 2.8 Determine the extent of one's own authority regarding the health and safety responsibilities for other personnel 2.9 Establish the reporting lines for health and safety issues
3. Carry out risk assessment for task	3.1 Identify methods of assessing risk associated to a trade task 3.2 Identify methods of recognising hazards associated to a trade task 3.3 Clarify work area risks associated with a task 3.4 Identify environmental hazards associated with a trade task 3.5 Identify hazards to others from task activities

	<p>3.6 Establish hazards created by concurrent allied trade tasks</p> <p>3.7 Identify the methods of carrying out risk assessment</p> <p>3.8 Produce a risk assessment</p> <p>3.9 Record findings of risk assessments</p> <p>3.10 Record mitigated risks identified</p> <p>3.11 Report to chain of command any risks that cannot be mitigated</p>
4. Prepare a safe working environment for the task	<p>4.1 Identify the importance of working in a safe environment</p> <p>4.2 Identify workplace environmental hazards</p> <p>4.3 Identify a safe task area when working in hazardous conditions</p> <p>4.4 Select an area for the safe storage of task material</p> <p>4.5 Assemble environmental protection measures</p>
5. Determine correct personal protective equipment for task	<p>5.1 Define the need for personal protective equipment when working within hazardous materials, equipment or environments</p> <p>5.2 Select and use appropriate personal protective equipment for task</p>
6. Comply with accident and emergency procedures	<p>6.1 Identify the need to react appropriately to accidents and emergencies</p> <p>6.2 Identify qualified first aiders, appointed personnel and first aid equipment / facilities</p> <p>6.3 Comply with set procedures in the event of an injury to self and / or other personnel</p> <p>6.4 Establish the set procedures in the event of fire / incidents that require evacuation of workplace / location</p> <p>6.5 Carry out set procedures in the event of dangerous occurrences</p>
7. Determine safe storage requirements for task materials and consumables	<p>7.1 Identify the legislation related to storage of hazardous materials and consumables</p> <p>7.2 Identify the hazardous materials and consumables required for trade tasks</p> <p>7.3 Identify the security measures associated with trade materials and consumables</p> <p>7.4 Identify the methods safely separating of hazardous, fragile materials and consumables</p> <p>7.5 Comply with COSHH and storage legislation</p> <p>7.6 Safely separate hazardous and fragile materials and consumables</p> <p>7.7 Securely store trade materials and consumables</p>
8. Prepare trade equipment for task	<p>8.1 Establish the requirement to maintain the serviceability of trade related equipment</p> <p>8.2 Identify trade equipment for task</p> <p>8.3 Establish procedures for reporting equipment deficiencies or performance issues</p> <p>8.4 Carry out the appropriate inspection or maintenance required to prepare equipment for task within own capability and</p>

	authority
9. Prepare to use ICT draughting equipment safely	<p>9.1 Identify the importance of using draughting ICT equipment safely</p> <p>9.2 Identify hazards associated with the use of ICT draughting equipment</p> <p>9.3 Identify workplace ICT draughting equipment risks</p> <p>9.4 Carry out a Display Screen Equipment (DSE) Regulations Assessment</p> <p>9.5 Comply with DSE regulations assessment requirements</p> <p>9.6 Use ICT draughting equipment safely in the design office</p>
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit, learners will be able to work safely whilst engaged in the range of draughtsman tasks.
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	This unit has some synergy with the following NOS COSVR641 Conform to general workplace health, safety and welfare
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	M/615/7391
Title:	Plan and cost a Draughting task
Level:	5
Credit value:	3
GLH	22
TQT	28
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Establish task requirement from briefings	<p>1.1 Identify the need to accurately determine task requirements from briefings</p> <p>1.2 Identify the methods used to effectively extract information from line management verbal and written briefings</p> <p>1.3 Identify the lines of communication between task authority and line management</p> <p>1.4 Identify the technical information required to be extracted from briefings to establish task requirements</p> <p>1.5 Distinguish the processes used to determine permitted task timelines</p> <p>1.6 Establish task requirements from briefings</p> <p>1.7 Identify the financial elements of a task budget</p> <p>1.8 Extract task budget information from data provided by task authority, line management or contractor</p>
2. Interpret information from technical drawings	<p>2.1 Identify the range of methods used to impart drawn information</p> <p>2.2 Identify the features of the different categories of engineering drawings</p> <p>2.3 Identify the process used to select drawing sheets for task</p> <p>2.4 Identify the arrangement of a drawing sheet</p> <p>2.5 Identify the features of arrangement drawings</p> <p>2.6 Establish the features used to create projected drawn views</p> <p>2.7 Identify the range of general arrangement drawings used to present drawn information</p> <p>2.8 Identify the use of drawn lines from drawings</p> <p>2.9 Determine the technical information depicted by drawn lines</p> <p>2.10 Identify the range of character fonts and styles used to develop drawing information</p> <p>2.11 Identify the elements that make up a drawing sheet</p> <p>2.12 Identify the methods used to number drawings</p> <p>2.13 Interpret information contained within drawings</p>
3. Interpret	3.1 Identify the need for drawn specifications to visually

<p>specifications</p>	<p>communicate technical information</p> <p>3.2 Identify the methods used to provide a range of annotation used to depict specification</p> <p>3.3 Identify the techniques used to express drawing scales</p> <p>3.4 Identify the range of unit symbols and markers used to represent technical specification</p> <p>3.5 Identify the process of representing engineering tolerances</p> <p>3.6 Identify the methods used to depict technical references.</p> <p>3.7 Identify the methods of incorporating dimensions into drawings</p> <p>3.8 Identify the methods of depicting material specification</p> <p>3.9 Identify the range and use of abbreviations used to depict technical specifications</p> <p>3.10 Identify the process of recording amended information</p> <p>3.11 Identify the methods of incorporating component specifications into a drawing</p> <p>3.12 Identify the methods of incorporating assembly specifications into a drawing</p> <p>3.13 Identify the process of illustrating existing component specification into drawing</p> <p>3.14 Interpret specifications, notes and annotations contained within drawings and sketches</p>
<p>4. Carry out task related calculations</p>	<p>4.1 Identify the requirement to carryout trade related design calculations</p> <p>4.2 Identify the use of metric units of measurement</p> <p>4.3 Identify the use of imperial equivalent units of measurement</p> <p>4.4 Identify the requirement to apply SI prefixes to calculations</p> <p>4.5 Identify methods of solving volume problems</p> <p>4.6 Identify methods of using proportion and percentages in design tasks</p> <p>4.7 Identify methods of solving area problems</p> <p>4.8 Identify methods of solving temperature problems</p> <p>4.9 Identify methods of using equations to solve design tasks</p> <p>4.10 Identify methods of solving monetary problems</p> <p>4.11 Identify methods of solving time problems</p> <p>4.12 Identify methods of using Trigonometry in design tasks</p> <p>4.13 Identify methods of calculating scale and ratios</p> <p>4.14 Identify methods of using Geometry to solve design problems</p> <p>4.15 Identify methods of using angles in design tasks</p> <p>4.16 Identify methods of solving basic Algebraic problems</p> <p>4.17 Identify methods of using graphs in trade tasks</p> <p>4.18 Identify methods of using formulae in design tasks</p> <p>4.19 Identify methods of using estimating, rounding and averages in trade tasks</p> <p>4.20 Identify methods of using Indices to solve task problems</p> <p>4.21 Identify methods of using the Sine and Cosine Rule to</p>

	solve task problems
5. Calculate task related costs	<p>5.1 Identify the requirement to determine task costs</p> <p>5.2 Determine factors that affect cost calculations</p> <p>5.3 Identify factors that affect labour costs</p> <p>5.4 Identify factors that influence material costings</p> <p>5.5 Establish factors that affect equipment expenditure</p> <p>5.6 Identify methods of calculating labour costs</p> <p>5.7 Identify methods of calculating other costs</p> <p>5.8 Identify methods of calculating material costs</p> <p>5.9 Calculate the cost of materials, consumables and spares required to complete the task within - 0% +10%</p> <p>5.10 Calculate task costs</p>
6. Determine task resources	<p>6.1 Identify the requirement for Design Draughtsmen to determine task resources</p> <p>6.2 Identify the process of estimating task resources</p> <p>6.3 Identify the standard forms used to resource tasks</p> <p>6.4 Identify the recognised process of using designation of quantities to estimate task resources</p> <p>6.5 Establish the industry standard sizes for task materials</p> <p>6.6 Identify the process of calculating the working and storage areas for a task</p> <p>6.7 Identify the phases of a task and their relationship to task resourcing</p> <p>6.8 Identify the reference material available to calculate task resources</p> <p>6.9 Establish the procedures used to calculate task resources</p> <p>6.10 Identify methods of procuring resources through supply chain or by direct purchase</p> <p>6.11 Determine the resource requirement for each stage of the task using industry standard forms and material sizes</p> <p>6.12 Calculate the working area size and facilities to include storage of materials</p> <p>6.13 Calculate the materials, consumables and spares required to complete the task within - 0% / + 30% tolerance</p>
7. Produce a technical plan for the task	<p>7.1 Identify the requirement to produce technical plans</p> <p>7.2 Identify the process to produce technical plans</p> <p>7.3 Identify methods to recognise constraints</p> <p>7.4 Identify the impact of assumptions made during initial assessment of task</p> <p>7.5 Establish process to identifying limiting factors</p> <p>7.6 Identify factors critical to task success</p> <p>7.7 Establish methods of identifying concurrent tasks</p> <p>7.8 Identify methods of predicting task completion date</p> <p>7.9 Establishing a task start date</p> <p>7.10 Identify sequence of task stages</p> <p>7.11 Identify the process of producing a task works programme</p>

	<p>7.12 Identify standards appropriate to task</p> <p>7.13 Identify methods producing a legible works programme</p> <p>7.14 Produce a legible works programme</p> <p>7.15 Identify completion date to a tolerance of +0% - 30%</p> <p>7.16 Establish the quantity of material by type required for the task</p> <p>7.17 Identify the methods used to produce material and consumables list from drawings</p> <p>7.18 Identify available budgets for the task</p> <p>7.19 Estimate task costs by considering cost effectiveness of proposed solutions</p> <p>7.20 Produce a legible and detailed works programme</p> <p>7.21 Identify methods to calculate completion date to a tolerance of +0% -10% from works programme</p>
8. Communicate task solution to task authority	<p>8.1 Identify the requirement for Design Draughtsmen to communicate task solution to authority</p> <p>8.2 Identify the process of initiating communication with the authority</p> <p>8.3 Establish methods of communicating with the authority</p> <p>8.4 Identify methods to calculate budget requirements</p> <p>8.5 Compile information for inclusion into task solution briefing</p> <p>8.6 Identify any aspect of the task solution identified as beyond own capabilities</p> <p>8.7 Identify methods to communicate proposed task solutions with justifications for their selection</p> <p>8.8 Convey proposed task solution including costs to task authority</p>
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit, learners will be able to gather and interpret data to plan a range of draughtsman tasks.
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	This unit has some synergy with the following NOS COSBEDMO07 Confirm project requirements and needs in built environment design management
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is

appropriate)	allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	T/615/7392
Title:	Project and contract management
Level:	4
Credit value:	3
GLH	24
TQT	30
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Identify project management skills	1.1 Identify project management terminology 1.2 Identify the benefits of project management 1.3 Distinguish project management tools 1.4 Establish roles and responsibilities of key project personnel 1.5 Interpret project documentation 1.6 Apply project stages 1.7 Produce a detailed project plan
2. Identify contractual processes	2.1 Define the term 'gift taking' 2.2 Define the term 'contract' 2.3 Define the term 'commercial awareness' 2.4 Define the term 'unintentional contracts' 2.5 Identify contract and commercial impact in the organisational context 2.6 Interpret the commercial process 2.7 Apply contract documentation 2.8 Apply quality control (QC) measures
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit learners will be able to identify project and contract management processes
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	This unit has some synergy with the following NOS COSCCOC02 Prepare programmes and schedules of work in construction
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses

Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	L/615/7401
Title:	Advise on complex draughtsman tasks including capabilities and costs
Level:	4
Credit value:	1
GLH	5
TQT	8
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Advise management on draughtsman capability and development	<ul style="list-style-type: none"> <li>1.1 Identify factors that affect trade capability</li> <li>1.2 Identify current trade capability</li> <li>1.3 Identify trade limitations</li> <li>1.4 Establish the methods used to identify trade capability and limitations</li> <li>1.5 Identify current trade capability</li> <li>1.6 Identify current trade limitations</li> <li>1.7 Research current trade CPD available to tradesman</li> <li>1.8 Advise line management on trade limitations and capability</li> <li>1.9 Advise on CPD available to increase tradesman capabilities</li> </ul>
2. Liaise with task authority	<ul style="list-style-type: none"> <li>2.1 Identify the need to liaise with task authority</li> <li>2.2 Identify methods of establishing a point of contact with the task authority</li> <li>2.3 Identify the means of communicating with the task authority</li> <li>2.4 Identify the task areas that the tradesman may have to liaise with the task authority</li> <li>2.5 Identify the process of liaising with the task authority about manpower requirements</li> <li>2.6 Identify the process of liaising with the tasking authority on task equipment requirements</li> <li>2.7 Identify the process of liaising with the tasking authority on the duration of the task</li> <li>2.8 Identify the process of liaising with the task authority on tasking material requirements</li> <li>2.9 Identify the process of liaising with the tasking authority on issues of task costs</li> </ul>
3. Liaise with other trades	<ul style="list-style-type: none"> <li>3.1 Identify the need to liaise with other trades</li> <li>3.2 Identify the role of the Construction Force</li> <li>3.3 Identify the range of allied trades within the Construction Force</li> <li>3.4 Establish an overview of the execution of a construction</li> </ul>

	<p>project</p> <p>3.5 Identify methods of establishing a point of contact with the other trades</p> <p>3.6 Identify the limits of training and responsibilities of other trades relating to own task</p> <p>3.7 Identify the means of communicating with the other trades</p> <p>3.8 Identify the process of liaising with other trades during the task</p> <p>3.9 Identify methods of participating in project meetings</p> <p>3.10 Identify methods of producing meeting minutes</p> <p>3.11 Produce meeting minutes in a specified format</p>
<b>Additional information about the unit</b>	
Unit aim(s)	This unit is about a tradesman giving advice to management on trade capabilities, task and costings and liaising with other trades and authorities to plan a task
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	<p>This unit has some synergy with the following NOS</p> <p>COSBEDPC03 Direct design teams and communication</p>
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	R/615/7402
Title:	Supervise and mentor design trade staff
Level:	5
Credit value:	2
GLH	12
TQT	18
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Manage personnel during a trade task	<ul style="list-style-type: none"> <li>1.1 Identify the need to supervise trade task activities</li> <li>1.2 Identify the responsibilities assigned to positions of rank when supervising trade tasks</li> <li>1.3 Identify the responsibilities assigned to trade roles when supervising trade tasks</li> <li>1.4 Identify the limits of role responsibility and ability when supervising trade tasks</li> <li>1.5 Gather information required to successfully supervise a trade task</li> <li>1.6 Identify the methods of supervising task activities when supporting own trade personnel</li> <li>1.7 Identify the methods of supervising tasks with members of the Construction Force</li> <li>1.8 Identify the methods of supervising overseas tasks involving locally employed civilians</li> <li>1.9 Supervise trade personnel</li> <li>1.10 Supervise and coordinate multiple concurrent trade tasks</li> <li>1.11 Supervise quality control measures for trade personnel</li> </ul>
2. Mentor trade personnel	<ul style="list-style-type: none"> <li>2.1 Identify the need to mentor trade personnel</li> <li>2.2 Identify trade related factors that can affect an individual's trade performance</li> <li>2.3 Identify other factors that can affect an individual's trade performance</li> <li>2.4 Identify the limits of responsibility and ability to provide mentoring to trade personnel</li> <li>2.5 Identify the methods used to provide technical support to trade personnel</li> <li>2.6 Identify other methods of support for trade personnel</li> <li>2.7 Establish the process of communicating performance concerns to the appropriate point of contact within line management</li> <li>2.8 Mentor trade personnel</li> </ul>
3. Carry out team / office role	<ul style="list-style-type: none"> <li>3.1 Identify factors that affect the operation of the design office</li> <li>3.2 Identify factors that affect the operation of the design team</li> <li>3.3 Identify information sources contained within the technical reference library</li> <li>3.4 Identify methods of maintaining design office technical</li> </ul>

	<p>reference library</p> <p>3.5 Identify the process of managing change control relating to design documentation</p> <p>3.6 Identify methods to maintain design office operational procedures</p> <p>3.7 Identify the methods to maintain a safe and sustainable office working environment</p> <p>3.8 Implement quality control measures</p>
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit learners will be able to mentor other tradesmen employed in the design trades, and supervise those persons during a design task.
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	<p>This unit has some synergy with the following NOS</p> <p>COSBEDPC03 Direct design teams and communication</p>
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	F/616/9853
Title:	Electrical Services: Power - Advanced
Level:	5
Credit value:	9
GLH:	52
TQT:	90
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<i>The learner can:</i>
1. Produce sketches of power services	1.1 Carry out reconnaissance of existing power services 1.2 Sketch existing power services
2. Design power services	2.1 Describe the need for power services 2.2 Describe types of power services 2.3 Describe functions of power services 2.4 Identify regulations and standards for power services 2.5 Interpret regulations and standards for power services 2.6 Design solutions for power services 2.7 Design power services
3. Produce design reports for power services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for power services
4. Produce drawings of existing power services	4.1 Describe the need to produce drawings of existing power services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing power services 4.5 Produce drawings of existing power services
5. Produce drawings of proposed power services	5.1 Describe the need to produce drawings of proposed power services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed power services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed power services; survey existing power services; produce design reports for power services; design power

	services.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMPEO2-04 Producing mechanical engineering drawings using a CAD system</p> <p>SUMPM3 Contribute to comparing and choosing building services engineering design solutions</p> <p>EUSMUND7 Produce detailed drawings to support utility network activities</p> <p>EUSGNEM26 Provide technical information for the design of utility networks</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	J/616/9854
Title:	Electrical Services: Internal Lighting - Advanced
Level:	5
Credit value:	6
GLH:	32
TQT:	60
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of internal lighting services	1.1 Carry out reconnaissance of existing internal lighting services 1.2 Sketch existing internal lighting services
2. Design internal lighting services	2.1 Describe the need for internal lighting services 2.2 Describe types of internal lighting services 2.3 Describe functions of internal lighting services 2.4 Identify regulations and standards for internal lighting services 2.5 Interpret regulations and standards for internal lighting services 2.6 Design solutions for internal lighting services 2.7 Design internal lighting services
3. Produce design reports for internal lighting services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for internal lighting services
4. Produce drawings of existing internal lighting services	4.1 Describe the need to produce drawings of existing internal lighting services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing internal lighting services 4.5 Produce drawings of existing internal lighting services
5. Produce drawings of proposed internal lighting services	5.1 Describe the need to produce drawings of proposed internal lighting services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed internal lighting services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to

	<p>sketch and draw existing and proposed internal lighting services; survey existing internal lighting services; produce design reports for internal lighting services; design internal lighting services.</p>
<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>SUMPM3 Contribute to comparing and choosing building services engineering design solutions</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>

URN:	L/616/9855
Title:	Electrical Services: External Lighting - Advanced
Level:	5
Credit value:	6
GLH:	36
TQT:	60
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of external lighting services	1.1 Carry out reconnaissance of existing external lighting services 1.2 Sketch existing external lighting services
2. Design external lighting services	2.1 Describe the need for external lighting services 2.2 Describe types of external lighting services 2.3 Describe functions of external lighting services 2.4 Identify regulations and standards for external lighting services 2.5 Interpret regulations and standards for external lighting services 2.6 Design solutions for external lighting services 2.7 Design external lighting services
3. Produce design reports for external lighting services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for external lighting services
4. Produce drawings of existing external lighting services	4.1 Describe the need to produce drawings of existing external lighting services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing external lighting services 4.5 Produce drawings of existing external lighting services
5. Produce drawings of proposed external lighting services	5.1 Describe the need to produce drawings of proposed external lighting services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed external lighting services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to

	<p>sketch and draw existing and proposed external lighting services; survey existing external lighting services; produce design reports for external lighting services; design external lighting services.</p>
<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>

URN:	R/616/9856
Title:	Electrical Services: Fire Alarms - Advanced
Level:	5
Credit value:	5
GLH:	24
TQT:	50
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of fire alarm services	1.1 Carry out reconnaissance of existing fire alarm services 1.2 Sketch existing fire alarm services
2. Design fire alarm services	2.1 Describe the need for fire alarm services 2.2 Describe types of fire alarm services 2.3 Describe functions of fire alarm services 2.4 Identify regulations and standards for fire alarm services 2.5 Interpret regulations and standards for fire alarm services 2.6 Design solutions for fire alarm services 2.7 Design fire alarm services
3. Produce design reports for fire alarm services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for fire alarm services
4. Produce drawings of existing fire alarm services	4.1 Describe the need to produce drawings of existing fire alarm services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing fire alarm services 4.5 Produce drawings of existing fire alarm services
5. Produce drawings of proposed fire alarm services	5.1 Describe the need to produce drawings of proposed fire alarm services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed fire alarm services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed fire alarm services; survey existing fire alarm services ; produce design reports for fire alarm services; design fire alarm

	services.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SFS MFP 3 Design solutions for mechanical fire protection</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	Y/616/9857
Title:	Mechanical Services: Hot and Cold Water Services - Advanced
Level:	5
Credit value:	7
GLH:	40
TQT:	68
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of water services	1.1 Carry out reconnaissance of existing water services 1.2 Sketch existing water services
2. Design water services	2.1 Describe the need for water services 2.2 Describe types of water services 2.3 Describe functions of water services 2.4 Identify regulations and standards for water services 2.5 Interpret regulations and standards for water services 2.6 Design solutions for water services 2.7 Design water services
3. Produce design reports for water services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for water services
4. Produce drawings of existing water services	4.1 Describe the need to produce drawings of existing water services 4.2 Identify standard and format for drawings 4.3 Identify available resources 4.4 Survey existing water services 4.5 Produce drawings of existing water services
5. Produce drawings of proposed water services	5.1 Describe the need to produce drawings of proposed water services 5.2 Identify standard and format for drawings 5.3 Identify available resources 5.4 Produce drawings of proposed water services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed water services; survey existing water services; produce design reports for water systems; design water services.

<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>

URN:	D/616/9858
Title:	Mechanical Services: Heating systems - Advanced
Level:	5
Credit value:	8
GLH:	52
TQT:	78
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of heating systems	1.1 Carry out reconnaissance of existing heating systems 1.2 Sketch existing heating systems
2. Design heating systems	2.1 Describe the need for heating systems 2.2 Describe types of heating systems 2.3 Describe functions of heating systems 2.4 Identify regulations and standards for heating systems 2.5 Interpret regulations and standards for heating systems 2.6 Design solutions for heating systems 2.7 Design heating systems
3. Produce design reports for heating systems	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for heating systems
4. Produce drawings of existing heating systems	4.1 Describe the need to produce drawings of existing heating systems 4.2 Identify standard and format for drawings 4.3 Identify available resources 4.4 Survey existing heating systems 4.5 Produce drawings of existing heating systems
5. Produce drawings of proposed heating systems	5.1 Describe the need to produce drawings of proposed heating systems 5.2 Identify standard and format for drawings 5.3 Identify available resources 5.4 Produce drawings of proposed heating systems
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed heating systems; survey existing heating systems; produce design reports for heating systems; design heating

	systems.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	H/616/9859
Title:	Mechanical Services: Ventilation and Air Conditioning systems - Advanced
Level:	5
Credit value:	9
GLH:	42
TQT:	90
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of ventilation and air conditioning systems	1.1 Carry out reconnaissance of existing ventilation and air conditioning systems 1.2 Sketch existing ventilation and air conditioning systems
2. Design ventilation and air conditioning systems	2.1 Describe the need for ventilation and air conditioning systems 2.2 Describe types of ventilation and air conditioning systems 2.3 Describe functions of ventilation and air conditioning systems 2.4 Identify regulations and standards for ventilation and air conditioning systems 2.5 Interpret regulations and standards for ventilation and air conditioning systems 2.6 Design solutions for ventilation and air conditioning systems 2.7 Design ventilation and air conditioning systems
3. Produce design reports for ventilation and air conditioning systems	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for ventilation and air conditioning systems
4. Produce drawings of existing ventilation and air conditioning systems	4.1 Describe the need to produce drawings of existing ventilation and air conditioning systems 4.2 Identify standard and format for drawings 4.3 Identify available resources 4.4 Survey existing ventilation and air conditioning systems 4.5 Produce drawings of existing ventilation and air conditioning systems
5. Produce drawings of proposed ventilation and air conditioning systems	5.1 Describe the need to produce drawings of proposed ventilation and air conditioning systems 5.2 Identify standard and format for drawings 5.3 Identify available resources

	5.4 Produce drawings of proposed ventilation and air conditioning systems
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed ventilation and air conditioning systems; survey existing ventilation and air conditioning systems; produce design reports for ventilation and air conditioning systems; design ventilation and air conditioning systems.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	Y/616/9860
Title:	Mechanical Services: Water Treatment and Supply systems - Advanced
Level:	4
Credit value:	2
GLH:	12
TQT:	20
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of water treatment and supply systems	1.1 Carry out reconnaissance of existing water treatment and supply systems 1.2 Sketch existing water treatment and supply systems
2. Design water treatment and supply systems	2.1 Describe the need for water treatment and supply systems 2.2 Describe types of water treatment and supply systems 2.3 Describe functions of water treatment and supply systems 2.4 Identify regulations and standards for water treatment and supply systems 2.5 Interpret regulations and standards for water treatment and supply systems 2.6 Design solutions for water treatment and supply systems 2.7 Design water treatment and supply systems
3. Produce design reports for water treatment and supply systems	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for water treatment and supply systems
4. Produce drawings of existing water treatment and supply systems	4.1 Describe the need to produce drawings of existing water treatment and supply systems 4.2 Identify standard and format for drawings 4.3 Identify available resources 4.4 Survey existing water treatment and supply systems 4.5 Produce drawings of existing water treatment and supply systems
5. Produce drawings of proposed water treatment and supply systems	5.1 Describe the need to produce drawings of proposed water treatment and supply systems 5.2 Identify standard and format for drawings 5.3 Identify available resources 5.4 Produce drawings of proposed water treatment and supply

	systems
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed water treatment and supply systems; survey existing water treatment and supply systems; produce design reports for water treatment and supply systems; design water treatment and supply systems.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	D/616/9861
Title:	Mechanical Design for Manufacture and Repair - Advanced
Level:	4
Credit value:	6
GLH:	24
TQT:	60
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of components for manufacture and repair	1.1 Carry out measurement of existing components 1.2 Sketch existing components
2. Design components for manufacture and repair	2.1 Describe the need for the manufacture and repair of components 2.2 Describe types of components for manufacture and repair 2.3 Describe functions of components for manufacture and repair 2.4 Identify regulations and standards for components for manufacture and repair 2.5 Interpret regulations and standards for components for manufacture and repair 2.6 Design solutions for components for manufacture and repair 2.7 Design components for manufacture and repair
3 Produce drawings of existing components	3.1 Describe the need to produce drawings of existing components 3.2 Identify standard and format for engineering drawings for components 3.3 Identify available resources 3.4 Measure existing components 3.5 Produce drawings of existing components
4 Produce drawings of new components for manufacture and repair	4.1 Describe the need to produce drawings of new components 4.2 Identify standard and format for engineering drawings of components 4.3 Identify available resources 4.4 Produce drawings of new components
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and new components; measure existing components; design components for manufacture and repair.

<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>This unit has some synergy with the following NOS:</p> <p>SEMAE3-002 Using and interpreting engineering drawings and documents</p> <p>SEMPEO2-04 Producing mechanical engineering drawings using a CAD system</p> <p>SEMETS3-04 Producing mechanical engineering drawings using computer aided techniques</p> <p>CCSCR9 Produce a drawing or sketch, working stage or rough, sample, model or prototype of craft (Low match)</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>

## Optional Units

URN:	A/615/4266
Title:	Use Draughtsman Trade Equipment – Optional Unit
Level:	3
Credit value:	9
GLH	70
TQT	90
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Identify trade equipment and materials for task	1.1 Define the need to recognise trade equipment and materials for task 1.2 Identify trade equipment for task 1.3 Identify Point of Contact (POC) to procure appropriate resources 1.4 Identify tools and materials in accordance with an invoice and or resources stores list 1.5 Assist POC in the identification of equipment 1.6 Identify trade consumables for task 1.7 Select trade consumables for task 1.8 Select appropriate equipment for task
2. Inspect draughtsman trade equipment and materials	2.1 Define the need to inspect trade equipment and materials for task 2.2 Identify the methods used to inspect task equipment 2.3 Identify methods of recording equipment inspection and service history 2.4 Identify methods of confirming suitability of materials 2.5 Check suitability of materials for task 2.6 Examine equipment documentation to confirm serviceability 2.7 Conduct any remedial inspection or maintenance of task equipment 2.8 Communicate any remedial actions that prevents tools/equipment being used for task
3. Use manual draughting equipment	3.1 Identify the requirement to use manual draughting equipment 3.2 Identify manual draughting equipment 3.3 Identify the methods of using manual draughting equipment to draw manually 3.4 Use manual draughting aids to draw manually
4. Use measuring devices	4.1 Identify the need to use trade measuring equipment 4.2 Identify the methods of using scientific calculators to develop

	<p>construction design information</p> <p>4.3 Establish how the environment can affect taking accurate site measurements</p> <p>4.4 Identify the methods of taking accurate site measurements using measuring equipment</p> <p>4.5 Identify the use of measuring equipment</p> <p>4.6 Identify the correct care and maintenance of measuring equipment</p> <p>4.7 Identify measuring devices</p> <p>4.8 Identify the safe methods of using laser measuring equipment's</p> <p>4.9 Identify the correct methods of using measuring equipment</p> <p>4.10 Identify the correct care and maintenance of measuring equipment</p> <p>4.11 Measure distance using analogue measuring equipment</p> <p>4.12 Measure distance using measuring equipment</p> <p>4.13 Establish measurements and angles using measuring equipment</p> <p>4.14 Operate scientific calculators</p> <p>4.15 Select appropriate measuring equipment for drawing task</p> <p>4.16 Use measuring equipment to develop design task</p> <p>4.17 Select appropriate measuring device for task</p> <p>4.18 Prepare measuring equipment to carry out task</p> <p>4.19 Use measuring equipment to carry out task</p>
5. Use ICT devices	<p>5.1 Identify the need of ICT equipment for draughting tasks</p> <p>5.2 Identify current ICT equipment used to produce draughting tasks</p> <p>5.3 Identify the method of visually inspecting ICT equipment for serviceability</p> <p>5.4 Identify the requirement to comply with portable appliance testing procedures</p> <p>5.5 Setup draughting ICT equipment to provide draughting products</p> <p>5.6 Identify the requirement to carry out display screen risk assessments before using ICT equipment</p> <p>5.7 Identify the process of completing display screen risk assessments for ICT equipment</p> <p>5.8 Carry out display screen equipment risk assessment</p> <p>5.9 Record display screen equipment risk assessment.</p> <p>5.10 Comply with findings of display screen equipment risk assessment</p> <p>5.11 Use ICT equipment to produce draughting products</p>
6. Utilise trade ICT software	<p>6.1 Identify the use of trade ICT software for draughting tasks</p> <p>6.2 Identify current trade software programmes and applications</p> <p>6.3 Identify the operating procedures to use trade software programmes and applications</p> <p>6.4 Identify the point of contact to procure and update trade</p>

	<p>related software applications</p> <p>6.5 Use ICT software applications to provide trade support for project</p>
7. Working safely with trade tools/equipment	<p>7.1 Identify the need to work safely with trade equipment and materials</p> <p>7.2 Identify the current safety legislation relating to trade equipment</p> <p>7.3 Identify the safety legislation relating to the use of trade materials</p> <p>7.4 Identify the methods of working safely with trade equipment and materials</p> <p>7.5 Identify safe and responsible methods of disposing of draughting trade waste/ defunct equipment</p> <p>7.6 Apply safe working methods when working on task</p>
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit, learners will be able to use trade equipment for a range of draughtsman tasks.
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	<p>This unit has some synergy with the following NOS</p> <p>COSVR641 Conform to general workplace health, safety and welfare</p> <p>SEMPEO2-61 Producing CAD models (drawings) using a CAD system</p>
Details of the relationship between the unit and other standards or curricula (if appropriate)	This unit maps to the Military Engineer (Draughtsman) Courses
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	Y/615/7403
Title:	Use computer aided design (CAD) software - Optional Unit
Level:	3
Credit value:	9
GLH	83
TQT	89
Learning outcomes	Assessment criteria
The learner will:	The learner can:
1. Use 2 dimensional (2D) CAD system	<ul style="list-style-type: none"> <li>1.1 Identify the requirement to use 2D CAD software</li> <li>1.2 Identify 2D CAD system hardware</li> <li>1.3 Identify 2D CAD system software</li> <li>1.4 Identify the methods of setting up CAD system to produce drawings</li> <li>1.5 Identify the methods of configuring CAD system devices</li> <li>1.6 Identify file management commands to manage 2D CAD files</li> <li>1.7 Identify the features of a 2D CAD interface</li> <li>1.8 Identify the methods of drawing lines using CAD</li> <li>1.9 Identify the methods of drawing shapes using CAD</li> <li>1.10 Identify the methods of creating lines with multiple vertices using CAD</li> <li>1.11 Identify the methods of carrying out editing routines using CAD.</li> <li>1.12 Produce 2D drawings using CAD</li> <li>1.13 Identify methods to manipulate 2D CAD user coordinate system commands to manage system</li> <li>1.14 Identify methods of saving CAD drawings</li> <li>1.15 Save CAD drawing files</li> </ul>
2. Generate plots	<ul style="list-style-type: none"> <li>2.1 Identify the use of plots in drawing tasks</li> <li>2.2 Identify plotting equipment</li> <li>2.3 Identify the operating modes of the plotting equipment</li> <li>2.4 Identify plotting materials and consumables</li> <li>2.5 Identify user checks and maintenance for plotting and associated equipment</li> <li>2.6 Identify methods of generating plot information</li> <li>2.7 Generate accurate plots</li> </ul>
3. Use Blocks and Attributes within CAD drawings	<ul style="list-style-type: none"> <li>3.1 Identify the purpose of blocks and attributes</li> <li>3.2 Identify block and attributes commands and options</li> <li>3.3 Identify methods of using block and attributes</li> <li>3.4 Use block and attributes</li> <li>3.5 Identify methods of saving block and attributes</li> </ul>

	3.6 Save blocks and attribute
4. Use layers within drawings	4.1 Identify the purpose of layers 4.2 Identify the process to set up layers within drawings 4.3 Identify layer controls and commands 4.4 Identify methods of using layer controls and commands 4.5 Produce a drawing using multiple layer management
5. Use Inquiry commands	5.1 Identify the purpose of the Inquiry function to analyse drawing detail 5.2 Identify Inquiry controls and commands 5.3 Identify methods of using Inquiry function 5.4 Identify the process to set up user commands to carry out Inquiry commands 5.5 Use Inquiry function to calculate drawing detail 5.6 Identify methods of saving Inquiry information 5.7 Save Inquiry information
6. Use Editing commands	6.1 Identify the requirement to modify drawing information using editing commands 6.2 Identify editing commands 6.3 Identify methods of using editing commands 6.4 Use editing commands to edit drawing information 6.5 Use editing commands to modify text within a drawing
7. Use Display commands	7.1 Identify the use of display commands to depict CAD detail 7.2 Identify Display controls and commands and options 7.3 Identify the methods of using display commands 7.4 Use display commands to change drawing display
8. Insert dimensions to drawings	8.1 Identify dimensions controls and commands 8.2 Identify the methods used to add dimensions to drawings 8.3 Insert dimensions onto a CAD drawing
9. Produce drawn elements using CAD	9.1 Identify the requirement to draw elements using CAD 9.2 Identify the commands required to draw elements using CAD 9.3 Identify the methods used to produce drawn elements 9.4 Use commands to produce drawn elements
10. Incorporate 3D views within a drawing	10.1 Identify the use of 3D views in drawings 10.2 Identify 3D CAD system hardware 10.3 Identify 3D CAD system software 10.4 Identify the methods of setting up a 3D CAD system 10.5 Identify the features of a 3D CAD system interface 10.6 Identify 3D CAD system drawing commands 10.7 Identify 3D CAD file management commands 10.8 Identify the method of producing 3D shapes using solid modelling techniques 10.9 Identify methods of producing 3D shapes/models using 3D CAD 10.10 Identify the methods of using Boolean function to multiply or subtract drawing objects 10.11 Identify the methods of editing 3D objects 10.12 Identify methods of rendering

	<p>10.13 Use render functions to create images</p> <p>10.14 Identify CAD view commands to display 3D features</p> <p>10.15 Identify the methods of viewing 3D models in display modes</p> <p>10.16 Identify methods of using the CAD solid modelling controls to develop 3D models</p> <p>10.17 Identify the methods of producing 3D model views using 3D CAD</p> <p>10.18 Produce 3D views using 3D CAD</p> <p>10.19 Identify the methods of exporting 3D CAD data</p> <p>10.20 Manage 3D CAD data</p> <p>10.21 Identify methods of saving 3D views to a drawing</p> <p>10.22 Use commands to save 3D drawing views</p>
11. Create CAD construction drawings	<p>11.1 Identify the requirement to create CAD construction drawings</p> <p>11.2 Identify the type of construction drawings produced using CAD</p> <p>11.3 Set up CAD system to produce construction drawings</p> <p>11.4 Select the appropriate scale required for construction drawing task</p> <p>11.5 Produce construction drawings using CAD</p> <p>11.6 Print construction drawings using CAD commands</p> <p>11.7 Identify methods to save construction drawings using CAD commands</p> <p>11.8 Save construction drawings using CAD commands</p>
12. Remedy CAD operating faults	<p>12.1 Identify initial response to loss of system functionality</p> <p>12.2 Identify methods of self-diagnosing loss of CAD system functionality</p> <p>12.3 Identify external help options to reinstate CAD system functionality</p> <p>12.4 Reinstate CAD system functionality</p>
<b>Additional information about the unit</b>	
Unit aim(s)	On completion of this unit, learners will be able to use CAD software to carry out draughtsman tasks.
Details of the relationship between the unit and relevant national occupational standards (if appropriate)	This unit has some synergy with the following NOS SEMPEO2-61 Producing CAD models (drawings) using a CAD system
Details of the relationship between the unit and other standards or curricula (if	This unit maps to the Military Engineer (Draughtsman) Courses

appropriate)	
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	H/616/9862
Title:	Electrical Services: Intruder Alarms – Advanced – Optional Unit
Level:	4
Credit value:	2
GLH:	8
TQT:	18
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of intruder alarm services	1.1 Carry out reconnaissance of existing intruder alarm services 1.2 Sketch existing intruder alarm services
2. Design intruder alarm services	2.1 Describe the need for intruder alarm services 2.2 Describe types of intruder alarm services 2.3 Describe functions of intruder alarm services 2.4 Identify regulations and standards for intruder alarm services 2.5 Interpret regulations and standards for intruder alarm services 2.6 Design solutions for intruder alarm services 2.7 Design intruder alarm services
3. Produce design reports for intruder alarm services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for intruder alarm services
4. Produce drawings of existing intruder alarm services	4.1 Describe the need to produce drawings of existing intruder alarm services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing intruder alarm services 4.5 Produce drawings of existing intruder alarm services
5. Produce drawings of proposed intruder alarm services	5.1 Describe the need to produce drawings of proposed intruder alarm services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed intruder alarm services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed intruder alarm

	<p>services; survey existing intruder alarm services; produce design reports for intruder alarm services; design intruder alarm services.</p>
<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>This unit has some synergy with the following NOS:</p> <p>SEMPEO2-04 Producing mechanical engineering drawings using a CAD system</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SUMSST3 Apply design principles to building services engineering projects</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>

URN:	K/616/9863
Title:	Electrical Services: Airfield Lighting – Advanced – Optional Unit
Level:	4
Credit value:	2
GLH:	8
TQT:	18
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of airfield lighting services	1.1 Carry out reconnaissance of existing airfield lighting services 1.2 Sketch existing airfield lighting services
2. Design airfield lighting services	2.1 Describe the need for airfield lighting services 2.2 Describe types of airfield lighting services 2.3 Describe functions of airfield lighting services 2.4 Identify regulations and standards for airfield lighting services 2.5 Interpret regulations and standards for airfield lighting services 2.6 Design solutions for airfield lighting services 2.7 Design airfield lighting services
3. Produce design reports for airfield lighting services	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for airfield lighting services
4. Produce drawings of existing airfield lighting services	4.1 Describe the need to produce drawings of existing airfield lighting services 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing airfield lighting services 4.5 Produce drawings of existing airfield lighting services
5. Produce drawings of proposed airfield lighting services	5.1 Describe the need to produce drawings of proposed airfield lighting services 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed airfield lighting services
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed airfield lighting

	services; survey existing airfield lighting services; produce design reports for airfield lighting services; design airfield lighting services.
Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)	<p>This unit has some synergy with the following NOS:</p> <p>SEMPEO2-04 Producing mechanical engineering drawings using a CAD system</p> <p>PPLAOG40 Monitor airfield condition and operations</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
Assessment requirements specified by a sector or regulatory body (if appropriate)	This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.
Name of the organisation submitting the unit	Defence Awarding Organisation

URN:	M/616/9864
Title:	Mechanical Services: Fire Protection systems – Optional Unit
Level:	4
Credit value:	2
GLH:	12
TQT:	20
Learning outcomes	Assessment criteria
<i>The learner will:</i>	<b><i>The learner can:</i></b>
1. Produce sketches of Fire Protection systems	1.1 Carry out reconnaissance of existing fire protection systems 1.2 Sketch existing fire protection systems
2. Design Fire Protection systems	2.1 Describe the need for fire protection systems 2.2 Describe types of fire protection systems 2.3 Describe functions of fire protection systems 2.4 Identify regulations and standards for fire protection systems 2.5 Interpret regulations and standards for fire protection systems 2.6 Design solutions for fire protection systems 2.7 Design fire protection systems
3. Produce design reports for Fire Protection systems	3.1 Describe the need for design reports 3.2 Describe the contents of a design report 3.3 Identify standard and format for design reports 3.4 Produce design reports to specified standard 3.5 Produce design reports including all relevant information 3.6 Present design reports for fire protection systems
4. Produce drawings of existing Fire Protection systems	4.1 Describe the need to produce drawings of existing fire protection systems 4.2 Identify standard and format for services drawings 4.3 Identify available resources 4.4 Survey existing fire protection systems 4.5 Produce drawings of existing fire protection systems
5. Produce drawings of proposed Fire Protection systems	5.1 Describe the need to produce drawings of proposed fire protection systems 5.2 Identify standard and format for services drawings 5.3 Identify available resources 5.4 Produce drawings of proposed fire protection systems
Additional information about the unit	
Unit purpose and aim(s)	On completion of this unit, learners will be able to sketch and draw existing and proposed fire protection

	<p>systems; survey existing fire protection systems; produce design reports for fire protection systems; design fire protection systems.</p>
<p>Details of the relationship between the unit and relevant National Occupational Standards or other professional standards or curricula (if appropriate)</p>	<p>This unit has some synergy with the following NOS:</p> <p>SEMETS3-10 Producing engineering systems/services drawings using computer aided techniques</p> <p>SFS MFP 3 Design solutions for mechanical fire protection</p> <p>This unit maps to the Military Engineer (Draughtsman E&amp;M 7382) Course</p>
<p>Assessment requirements specified by a sector or regulatory body (if appropriate)</p>	<p>This unit requires the assessment of occupational competence under realistic conditions wherever practicable. For the knowledge and understanding component of the unit, assessment from a learning and development environment is allowed.</p>
<p>Name of the organisation submitting the unit</p>	<p>Defence Awarding Organisation</p>