



Non domestic training specification

Utilisation sector

NON DOMESTIC TRAINING SPECIFICATION
UTILISATION SECTOR

Copyright © 2016, IGEM. All rights reserved
Registered charity number 214001

All content in this publication is, unless stated otherwise, the property of IGEM. Copyright laws protect this publication. Reproduction or retransmission in whole or in part, in any manner, without the prior written consent of the copyright holder, is a violation of copyright law.

ISBN 978 1 905903 64-1
ISSN 0367 7850
Published by the Institution of Gas Engineers and Managers

Previous Publications:

For information on other IGEM Standards please visit our website, www.igem.org.uk

CONTENTS

SECTION		PAGE
1	Introduction	1
2	Scope	2
3	Governance	2
4	Specification for non domestic training	2
5	Part 1: Introduction to the gas industry for the non domestic utilisation sector	2
6	Part 2: Specific training for non domestic utilisation sector	5

APPENDIX

1	Part 1 – Subjects theoretical and practical	7
2	Part 2 – Subjects theoretical and practical	16
3	Further guidance	24
4	References, glossary, acronyms and definitions	25
5	Task log for Part 1 `On the job` activities	27
6	Task log for Part 2 `Off the job` activities sector specific legislation and standards	28
7	Task log for Part 2 `On the job` activities – sector specific	29

1 INTRODUCTION

- 1.1 'Standards of training in gas work' (IGEM/IG/1) is one of the outcomes from revision in 2013 to the Safety in the installation and use of gas systems and appliances L56 Approved Code of Practice and relates specifically to Regulation 3 (1), see paragraphs 80 and 81.
- 1.2 IGEM/IG/1 sets out the requirements for training in gas work for; new entrants to the gas industry working under the scope of the Gas Safety (Installation and Use) Regulations (GS(I&U)R); those persons currently or previously registered seeking re-registration as a 'class of persons' (or have a relevant gas qualification) and; those persons working at premises or on equipment outside the scope of GS(I&U)R.
- 1.3 This Non domestic training Specification relates to:
- **new entrants** into the gas industry wishing to become a 'class of persons' will be required to undertake **an industry recognised** training course before being able to take an assessment under the Nationally Accredited Certification Scheme for Individual Gas Fitting Operatives (ACS) to become Gas Safe registered.
- 1.4 Industry has recognised that there has been a shortfall in training and so a two part learning programme has been structured to cater for new applicants wishing to enter the gas industry and work in the non domestic utilisation sector.
- 1.5 Industry formed a working group facilitated by IGEM to prepare this Specification. Those industry bodies who contributed include the Large Business Forum, EUA, ICOM, CEDA, CESA, CITB, SLEAT, UKLPG, EU Skills, Gas Safe Register and organisations including National Grid, Wales and West Utilities, National Grid Metering, Energy Assets, Calor, Carillion, British Gas Business Commercial Services, Romec, UK Certification, Northern Gas Assessment Services, Logic Certification, Blueflame Associates, GTS, CH4 Services, Global Energy Associates, Installation and Design Services, SA Gas Engineering, Cert-ain Certification, Specialist Gas Assessment Services, GATC, CentriC Technical Services.
- 1.6 This Specification is designed to provide the criteria for training to be developed for a new entrant to the industry to gain an initial overall understanding of the non domestic gas industry and then proceed to a sector specialisation course, for example pipework, metering, heating, catering, laundry and process/plant.
- 1.7 Training courses that have been designed to meet this Specification and have acquired industry recognition will enable those that successfully complete that training to apply to an ACS centre for an appropriate assessment(s) of competence. Passing such assessment(s) will enable that person to apply to Gas Safe Register to become a 'class of persons' to allow them to work in those premises covered by GS(I&U)R.
- 1.8 This training may equally be appropriate for those persons working at premises or on equipment outside the scope of GS(I&U)R.

2 SCOPE

- 2.1 This training Specification covers training for new entrants wishing to work in non domestic utilisation sector.
- 2.2 The requirements of that training will include theoretical and practical subjects and the activities that will have to be undergone in a work placement supervised by a Gas Safe registered engineer, as appropriate.
- 2.3 The requirements will include the minimum time spent on each subject along with the job activities that are required to be undertaken and the maximum time spent to complete the training is expected to be two years.

3 GOVERNANCE

This Specification has been facilitated by IGEM and has undergone industry consultation and been approved by IGEM's Gas Utilisation Committee and Gas Measurement Committee. IGEM's Technical Coordinating Committee has endorsed the specification, which has also been approved by the Standards Consultation Forum (SCF) and the Strategic Management Board (SMB).

4 SPECIFICATION FOR NON DOMESTIC TRAINING

- 4.1 This Specification is divided into two parts.
- 4.2 The first part is designed to cover the breadth of the industry including the legal requirements, basic theoretical and practical knowledge and understanding related to gas installations and is required to be undertaken successfully before commencing on the second part.
- 4.3 The second part can only be undertaken once the first part has been successfully completed.
- 4.4 The second part is designed to cover the specific sector requirements of the industry including the legal requirements, theoretical and practical knowledge and understanding related to those particular gas installations.

5 PART 1 : INTRODUCTION TO THE GAS INDUSTRY FOR THE NON DOMESTIC UTILISATION SECTOR

5.1 General

- 5.1.1 The training programme is to consist of basic theoretical and practical subjects in the non domestic utilisation sector ('Off the job' training) and a work placement ('On the job' training) to enable the learning to be enhanced in a work environment under the direct supervision of a competent engineer employed by a business (registered with Gas Safe Register, where appropriate).
- 5.1.2 'Off the job' training is that which the new entrant is trained in a classroom environment for enhanced theory input and practical workshop areas which simulate the practical environment for demonstration and skills practice. The balance between theory and practical work will be dependent on the content of the subject. Training organisations will be required to produce a lesson plan against the suggested topic areas to demonstrate how they will meet the scope of the subject.
- 5.1.3 'On the job' training is to be carried out in the workplace, under the direct supervision of a competent engineer employed by a business (registered with Gas Safe Register, where appropriate). 'On the job' training is to be adequate to ensure a range and scope of activity that is sufficient to demonstrate

evidence of experience has been attained. Record of the work carried out, the method undertaken and any other relevant information is to be retained to build a portfolio of evidence to be verified by the training organisation.

- 5.1.4 Arrangements need to be in place to ensure that the new entrant and the competent person, a registered Gas Safe engineer, as appropriate, who will be mentoring the new entrant knows what is expected of them. An interview is to be conducted with them and the responsible parties to confirm and ensure that everyone understands their role and responsibilities.
- 5.1.5 Written and practical tests need to be completed at the end of the programme to check the authenticity of the portfolio content and off the job training. The tests need to sample key safety aspects relevant to the utilisation sector. A selection of written and practical tests across the scope of the specific disciplines, are to be available to prevent predictability (see Sub-Section 5.3).

5.2 **Training**

5.2.1 *Minimum 'Off the job' duration*

The minimum learning is to be 65 hours made up by ten days of 6.5 hours.

The subjects covered in this part of the training are detailed in Appendix 1 and cover the range of non domestic utilisation activities undertaken including pipework, metering, heating, catering, laundry and process/plant.

The training is to cover both the theoretical and practical aspects of the work and this is also detailed in Appendix 1. The practical aspects would normally be carried out in a workshop.

5.2.2 *Minimum 'On the job' tasks and duration*

The minimum period for the work experience is to be three months and there is to be between 25 and 40 pieces of evidence dependent upon the type and complexity of the work being experienced.

Evidence gathered 'on the job' needs to further support the scope of the training programme and is to be endorsed by the engineer(s) of the Gas Safe registered business, or organisation, as appropriate. Evidence recorded is to be cross referenced to an evidence matrix (TASK LOG, see Appendix 5) to indicate where within the portfolio specific activities have been successfully completed and the minimum number of occasions for each activity to have been experienced. An acceptable allowance to provide evidence from a simulated environment, where the specified activity is not commonly undertaken or readily available in the workplace will be allowed where indicated.

5.3 **Verification of training**

- 5.3.1 A verification of the learning needs to be undertaken, which supports the training, the new entrant and the trainer.
- 5.3.2 The verification is to be a mixture of verbal, written and practical tests that need to be conducted during and at the end of the training.
- 5.3.3 These tests need to include, the portfolio of evidence that the trainee has submitted to establish that they have witnessed and/or undertaken the tasks (under direct supervision), gained knowledge and lessons learnt, all the subjects taught and be in an appropriate format for the subject.
- 5.3.4 The period for this review and the tests shall be a minimum of three days, additional to allotted training days.

- 5.3.5 The marking scheme for the tests needs to be open and transparent to the new entrant and the trainer.
- 5.3.6 Arrangements need to be in place for moderation and an independent review.
- 5.3.7 Pass mark needs to be set at 100% for matters of gas safety and on all others satisfy assessment criteria in line with recognised industry standards.

5.4 **Certificate**

A Part 1 certificate is to be presented to each successful new entrant. Detailing, as a minimum the name of the entrant, National Insurance number, the title of the course, date the certificate was awarded and the training organisation.

6 PART 2 : SPECIFIC TRAINING FOR NON DOMESTIC UTILISATION SECTOR

- 6.1.1 The second part can only be undertaken once the first part has been successfully completed.
- 6.1.2 The second part is designed to cover the specific sector requirements of the industry including the legal requirements, theoretical and practical knowledge and understanding related to those particular gas installations.
- 6.1.3 The training requirements set out below are for one specific non domestic utilisation sector. If the candidate wishes to cover more than one sector, then the scope and extent of the training will need to reflect the relevant requirements as detailed.

6.2 General

- 6.2.1 The training programme is to consist of further theoretical and practical subjects covering one or more of the specific trades in the non domestic utilisation sector ('Off the job' training) and a work placement ('On the job' training) to enable the learning to be enhanced in a work environment under the direct supervision of a competent engineer employed by a business (registered with Gas Safe Register, where appropriate).
- 6.2.2 'Off the job' training is that which the new entrant is trained in a classroom environment for enhanced theory input and practical workshop areas which simulate the practical environment for demonstration and skills practice. The balance between theory and practical work will be dependent on the content of the subject. Training organisations will be required to produce a lesson plan against the suggested topic areas to demonstrate how they will meet the scope of the subject.
- 6.2.3 'On the job' training is carried out in the workplace, under the direct supervision of a competent engineer employed by a business (registered with Gas Safe Register, where appropriate). 'On the job' training is to be adequate to ensure a range and scope of activity that is sufficient to demonstrate evidence of experience has been attained. Record of the work carried out, the method undertaken and any other relevant information is to be retained to build a portfolio of evidence to be verified by the training organisation.
- 6.2.4 Arrangements need to be in place to ensure that the new entrant and the competent person, a registered Gas Safe engineer, where appropriate, who will be mentoring the new entrant knows what is expected of them. An interview is to be conducted with them and the responsible parties to confirm and ensure that everyone understands their role and responsibilities.
- 6.2.5 Written and practical tests need to be completed at the end of the programme including checks of the authenticity of the portfolio content. The tests need to sample key safety areas relevant to the utilisation sector. A selection of tests across the scope of the core safety unit and specific disciplines are to be available to prevent predictability (see Sub-Section 6.4).

6.3 Training

6.3.1 *Minimum 'Off the job' duration*

The minimum learning shall be 19.5 hours made up by three days of 6.5 hours with a maximum of 65 hours made up by 10 days of 6.5 hours.

The subjects covered in this part of the training are detailed in Appendix 2 and cover the specific utilisation activities undertaken which will be one of the following specialist subjects: pipework, metering, heating, catering, laundry and process/plant. It is expected that the relevant Standards from

BSI, IGEM and UKLPG will be used to provide the trainee with the necessary background and understanding to support the training being provided.

The training has to cover both the theoretical and practical aspects of the work and this is also detailed in Appendix 2. The practical aspects would normally be carried out in a workshop.

6.3.2 *Minimum 'On the job' tasks and duration*

The minimum period for the work experience shall be three to six months and 20 to 40 pieces of evidence, dependent upon the sector specific requirements (see Appendix 2).

Evidence gathered 'on the job' needs to further support the scope of the training programme and is to be endorsed by the engineer(s) of the Gas Safe registered business, or organisation as appropriate. Evidence recorded is to be cross referenced to an evidence matrix (TASK LOG, see Appendix 6 and 7) to indicate where within the portfolio specific activities have been successfully completed and the minimum number of occasions for each activity to have been experienced. An acceptable allowance to provide evidence from a simulated environment, where the specified activity is not commonly undertaken or readily available in the workplace will be allowed where indicated.

6.4 **Verification of training**

6.4.1 A verification of the learning needs to be undertaken, which supports the training, the new entrant and the trainer.

6.4.2 The verification is to be a mixture of verbal, written and practical tests that need to be conducted during and at the end of the training.

6.4.3 These tests need to cover, the portfolio of evidence that the trainee has submitted to establish that they have witnessed and/or undertaken the tasks (under direct supervision), gained knowledge and lessons learnt, all the subjects taught and be in an appropriate format for the subject.

6.4.4 The period for this review and the tests shall be a minimum of four days.

6.4.5 The marking scheme for the tests needs to be open and transparent to the new entrant and the trainer.

6.4.6 Arrangements need to be in place for moderation and an independent review.

6.4.7 Pass mark needs to be set at 100% for matters of gas safety and on all others satisfy assessment criteria in line with recognised industry standards.

6.5 **Certificate**

A Part 2 authenticated certificate is to be presented to each successful new entrant. Detailing, as a minimum the name of the entrant, National Insurance number, the title of the course, area of utilisation, date the certificate was awarded and the training organisation.

APPENDIX 1 : PART 1 - SUBJECTS THEORETICAL AND PRACTICAL**PART 1 'OFF THE JOB' TRAINING**

Non Domestic utilisation (Subjects)

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	PRACTICAL EXERCISES TO INCLUDE
1. LEGISLATION AND BASIC SAFETY			
Gas Safety (Installation & Use) Regulations	Referencing standards Overview of Regulations Governance Stakeholders	T	N/A
Legislative, Normative and information document list	Referencing standards Overview of documents Appreciation and awareness	T	N/A
Documentation	Data capture Recording and storage of information	T	N/A
Basic Safety	Site induction Security Risk assessment Method statements DSEAR overview Recognition of danger	T	N/A
Asbestos	Asbestos awareness Risk assessment Precautions to take Industry TB's Reporting mechanism	T	N/A
Electricity	Associated services Safe isolation Testing for the absence of electricity Awareness of HSE Guidance Note GS38 (Electrical test equipment for use on low voltage electrical systems) Electrical hazards Bonding and Earthing Basic electrical theory and principles Voltage and resistance measurement Awareness of single and three phase supplies	T/P	Prove safe electrical isolation before working on gas appliances, systems and components, including locking off and the use of voltage detectors and proving units Measure voltage and resistance value, including earth loop impedance using appropriate test instruments for both single and three phase supply Visually inspect electrical power tools and equipment for safe condition before use
Water	Associated services Wastage Contamination Temperature & pressure	T	N/A

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	PRACTICAL EXERCISES TO INCLUDE
2. PRESSURE AND FLOW			
Measurement of pressure	Gauges Local testing	T/P	Select appropriate test gauge for test conditions Measure and record the installation standing pressure Measure and record the installation working pressure Determine if the installation working pressure is correct or incorrect State the actions to take if the working pressure is incorrect
Control of pressure	Regulators	T/P	Demonstrate how to regulate the gas pressure using a low pressure regulator
Properties of gas	Natural gas/LPG Bio-gas Gas/air mixtures Basic combustion (science)	T	N/A
3. PIPEWORK INSTALLATION			
Materials	Pipework materials Fittings Environment & suitability Building construction Pipework fixings Restrictions Pipe sizing	T/P	Select pipework materials suitable for specified environment and local conditions De-commission gas installations (including meter) and tee into existing pipework Re-commission gas installations (including meter) after teeing into existing pipework Install pipework passing through a cavity wall Apply gas pipework protective coating Identify a range of gas installation pipework safety defects
Jointing of pipework	Methods and suitable materials	T/P	Install pipework using appropriate fittings, methods and pipe supports Join copper tube and mild steel pipe using appropriate compression fittings, and methods
Use of temporary continuity bonds	Purpose Method of use	T/P	Demonstrate correct use of temporary continuity bond
Internal/external installation	Building regulations	T	N/A

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	PRACTICAL EXERCISES TO INCLUDE
4. PURGING AND TESTING PROCEDURES TO IGEM/UP/1			
Tightness testing	Low pressure Medium pressure Industry standards Trace and repair Testing to IGEM/UP/1, IGEM/UP/1A, IGEM/UP/1B	T/P	Test low pressure gas installations for tightness using air Test low pressure gas installations for tightness using gas Test existing low pressure gas installations for tightness with a medium pressure gas supply without a meter inlet valve Test existing gas installations for tightness with a medium pressure gas supply with a meter inlet valve
Let-by		T/P	Demonstrate let by test on an installation using appropriate testing Standard
Purging procedures		T/P	Purge installation using appropriate testing Standard
5. BASIC GAS METERING INSTALLATIONS			
Emergency control valves	Location and positioning End of the Network and IGEM/G/1	T/P	Identify incorrectly positioned emergency isolation controls and valves Identify the correct labels to attached emergency isolation controls and valves
Gas services	Termination internal/external	T	Demonstrate dealing with incorrectly positioned emergency isolation controls and valves
Meter regulators and filters	Awareness and purpose	T/P	Identify correct positioning of regulators and filters
Meter by-passes	Awareness and purpose	T	N/A
Metering (basic)	Principles Awareness of purpose Metering installations	T/P	Identify meter types and their different uses
6. INDUSTRY UNSAFE SITUATIONS PROCEDURES			
Classification of situations	Gas Industry Unsafe Situations Procedure	T/P	Identify unsafe situations Classify unsafe situations Make installation safe and label unsafe appliance(s)/installation(s) Demonstrate the procedure to follow for each classification of unsafe situation
Actions to undertake		T/P	Complete, explain and issue appropriate warning/advisory notices to the appropriate person(s)
RIDDOR	Reporting mechanism Documentation	T/P	Identify what to report under RIDDOR Identify when to report under RIDDOR

PART 1 'ON THE JOB' TRAINING**NON DOMESTIC/COMMERCIAL HEATING APPLIANCES**

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Appliance/equipment types	Indirect fired appliances Direct fired appliances Wet systems Air heaters Plaque heaters Tube heaters Suitability for purpose Principles of operation Location and environment Risk assessment	T/P
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P
Burner systems and their control	Types and principles of operation Logical fault diagnostics and rectification	T/P
Flues/Chimneys	Principles of operation Flue types Materials and construction Testing and commissioning Shared systems	T/P
Ventilation	Appliance requirements Acceptable methods of supply	T/P
Design	System design and suitability Manufacturer's instruction	T
Commissioning	Manufacturer's instructions Safe methods of work	T/P
Servicing	Manufacturer's instructions Safe methods of work	T/P
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P

NON DOMESTIC/COMMERCIAL CATERING

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Appliance/equipment types	Suitability for purpose Principles of operation Location and environment Risk assessment	T/P
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P
Planning and design	Awareness of kitchen design and suitability Manufacturer's instruction	T
Kitchen installation pipework	Appliance connection Isolation valves Flexible connections Cleaning	T/P
Canopies/Extract/Filtration	Types and design Calculating requirements Discharge	T/P
Interlock of gas supply	New installations Existing installations	T/P
Atmosphere testing of kitchens	IGEM/UP/19 CO/CO ₂ monitoring	T/P
Commissioning	Manufacturer's instructions Safe methods of work	T/P
Servicing and maintenance	Manufacturer's instructions Safe methods of work	T/P
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P

NON DOMESTIC/COMMERCIAL LAUNDRY EQUIPMENT

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Appliance/equipment types	Suitability for purpose Principles of operation Location and environment Risk assessment	T/P
Laundry installation pipework	Appliance connection Isolation valves Flexible connections Cleaning	T/P
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P
Principles of operation	Safety systems Manual operation Interlocks Automatic operation	T/P
Exhaust systems	Exhaust ductwork Flexible connections Termination Exhaust testing	T/P
Make up air	Calculation Location of inlet Multiple appliances Mechanical means	T/P
Commissioning	Manufacturer's instructions Safe methods of work	T/P
Servicing and maintenance	Manufacturer's instructions Safe methods of work	T/P
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P

LARGE PIPEWORK INSTALLATIONS

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Building regulations	Requirements and recommendations Other considerations, DSEAR etc. Design Line diagrams	T
Selection of materials and fittings	Pressure test, purge and vent points Ancillary components Consideration of environment Temperature, pressure, corrosion, stress Selection of manual and automatic valves and controls	T/P
Jointing of pipework	Design and location Materials Relation to other services Elevated pressures	T/P
Special locations	Suitability of materials Risk assessment Safe systems of work	T
Strength/Tightness testing and purging	Scope of IGEN documents Determining the test method General considerations Calculation Risk assessment	T/P
Boosters, Pre-mix machines	Location Ventilation Pipework connections Safety controls	T/P
Industry unsafe situations procedures	Classification of situations Actions to take	T/P

NON DOMESTIC METERING INSTALLATIONS

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Gas services	Recognition of service pressure Single stream/twin stream supplies	T/P
Meter types	Diaphragm, RPD, turbine	T
Emergency controls	Selection	T/P
Pressure and flow	Standing, working pressure	T/P
Commissioning/decommissioning	Risk assessment Method statement Environment	T/P
Meter regulators and filters	Principles of operation Maintenance Recorders By-passes Data loggers Smart metering Correctors	T/P
Testing and purging	Scope of IGEM documents Determining the test method General considerations Calculation Risk assessment	T/P
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P

INDUSTRIAL PROCESSES AND PLANT EQUIPMENT

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P
Commissioning gas fired plant	Planning Inspection Dry run checks Live run checks Chimney testing Combustion performance Air quality checks	T/P
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P

APPENDIX 2 : PART 2 - SUBJECTS THEORETICAL AND PRACTICAL**PART 2 'OFF THE JOB' TRAINING**

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
1. LEGISLATION AND BASIC SAFETY			
Gas Safety (Installation & Use) Regulations	Referencing standards Overview of Regulations Governance Stakeholders	T	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Legislative, Normative and information document list	Referencing standards Overview of documents Appreciation and awareness	T	
Documentation	Data capture Recording and storage of information	T	
Basic Safety	Site induction Security Risk assessment Method statements DSEAR overview Recognition of danger	T	
Asbestos	Asbestos awareness Risk assessment Precautions to take Industry TB's Reporting mechanism	T	
Electricity	Associated services Safe isolation Testing for the absence of electricity Awareness of HSE Guidance Note GS38 (Electrical test equipment for use on low voltage electrical systems) Electrical hazards Bonding and Earthing Basic electrical theory and principles Voltage and resistance measurement Awareness of single and three phase supplies	T/P	
Water	Associated services Wastage Contamination Temperature and pressure	T	

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
2. UTILISATION SPECIALIST SUBJECT			
STANDARDS AND CODES OF PRACTICE			
Pipework	See Standards	IGEM/UP/2 BS 6891 CoP 22 IGE/UP/1	1/2 DAY
Metering	See Standards and codes of practice	IGEM/G/1 IGE/GM/8 Pt 1-5 BS 6400 Pt 1-2 CoP 1/A CoP 1/B CoP 1/C	
Heating	See Standards	IGEM/UP/10 BS 6644	
Catering	See Standards	BS 6172 BS 6173 IGEM/UP/19 BS EN 203-1 DW172 CAIS23 CAIS12, CAIS17	
Laundry	See Standards	IGE/UP/3 IGEM/UP/4 IGEM/UP/10	
Process /plant	See Standards	IGE/UP/3, IGEM/UP/4, IGEM/UP/6, IGE/UP/9, IGEM/UP/10	
3. PRESSURE AND FLOW			
Measurement of pressure	Gauges Local testing	T/P	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Control of pressure	Regulators	T/P	
Properties of gas	Natural gas/LPG Bio-gas Gas/air mixtures Basic combustion (science)	T	
4. PIPEWORK INSTALLATION IGE/UP/2			
Materials	Pipework materials Fittings Environment and suitability Building construction Pipework fixings Restrictions Pipe sizing	T/P	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Jointing of pipework	Methods and suitable materials	T/P	
Use of temporary continuity bonds	Purpose Method of use	T/P	
Internal/external installation	Building regulations	T	

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
5. PURGING AND TESTING PROCEDURES TO IGEM/UP/1			
Tightness testing	Low pressure Medium pressure Industry standards Trace and repair Testing to IGEM/UP/1, IGEM/UP/1A	T/P	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Let-by		T/P	
Purging procedures		T/P	
6. BASIC GAS METERING INSTALLATIONS IGEM/GM/8			
Emergency control valves	Location and positioning	T/P	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Gas services	Termination internal/external	T	
Meter regulators and filters	Awareness and purpose	T/P	
Meter by-passes	Awareness and purpose	T	
Metering (basic)	Principles Awareness of purpose Metering installations	T/P	
7. INDUSTRY UNSAFE SITUATIONS PROCEDURES			
Classification of situations	Gas Industry Unsafe Situations Procedure	T/P	1/2 DAY Practical activities to be undertaken to reinforce learning in Part 1 and be specifically relevant to utilisation sector being studied
Actions to undertake		T/P	
RIDDOR	Reporting mechanism Documentation	T/P	

PART 2 'ON THE JOB' TRAINING

NON DOMESTIC/COMMERCIAL HEATING APPLIANCES

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Appliance/equipment types	Indirect fired appliances Direct fired appliances Wet systems Air heaters Plaque heaters Tube heaters Suitability for purpose Principles of operation Location and environment Risk assessment	T/P	6 MONTHS
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P	
Burner systems and their control	Types and principles of operation Logical fault diagnostics and rectification	T/P	
Flues/Chimneys	Principles of operation Flue types Materials and construction Testing and commissioning Shared systems	T/P	
Ventilation	Appliance requirements Acceptable methods of supply	T/P	
Design	System design and suitability Manufacturer's instructions	T	
Commissioning	Manufacturer's instructions Safe methods of work	T/P	
Servicing	Manufacturer's instructions Safe methods of work	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P	

NON DOMESTIC/COMMERCIAL CATERING

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Appliance/equipment types	Suitability for purpose Principles of operation Location and environment Risk assessment	T/P	4 MONTHS
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P	
Planning and design	Awareness of kitchen design and suitability Manufacturer's instructions	T	
Kitchen installation pipework	Appliance connection Isolation valves Flexible connections Cleaning	T/P	
Canopies/Extract/Filtration	Types and design Calculating requirements Discharge	T/P	
Interlock of gas supply	New installations Existing installations	T/P	
Atmosphere testing of kitchens	IGEM/UP/19 CO/CO ₂ monitoring	T/P	
Commissioning	Manufacturer's instructions Safe methods of work	T/P	
Servicing and maintenance	Manufacturer's instructions Safe methods of work	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P	

NON DOMESTIC/COMMERCIAL LAUNDRY EQUIPMENT

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Appliance/equipment types	Suitability for purpose Principles of operation Location and environment Risk assessment	T/P	6 MONTHS
Laundry installation pipework	Appliance connection Isolation valves Flexible connections Cleaning	T/P	
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P	
Principles of operation	Safety systems Manual operation Interlocks Automatic operation	T/P	
Exhaust systems	Exhaust ductwork Flexible connections Termination Exhaust testing	T/P	
Make up air	Calculation Location of inlet Multiple appliances Mechanical means	T/P	
Commissioning	Manufacturer's instructions Safe methods of work	T/P	
Servicing and maintenance	Manufacturer's instructions Safe methods of work	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P	

LARGE PIPEWORK INSTALLATIONS

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Building Regulations	Requirements and recommendations Other considerations, DSEAR etc. Design Line diagrams	T	6 MONTHS
Selection of materials and fittings	Pressure test, purge and vent points Ancillary components Consideration of environment Temperature, pressure, corrosion, stress Selection of manual and automatic valves and controls	T/P	
Jointing of pipework	Design and location Materials Relation to other services Elevated pressures	T/P	
Special locations	Suitability of materials Risk assessment Safe systems of work	T	
Strength/Tightness testing and purging	Scope of IGEM documents Determining the test method General considerations Calculation Risk assessment	T/P	
Boosters, Pre-mix machines	Location Ventilation Pipework connections Safety controls	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take	T/P	

NON DOMESTIC METERING INSTALLATIONS

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Gas services	Recognition of service pressure Single stream/twin stream supplies	T/P	6 MONTHS
Meter types	Diaphragm, RPD, turbine	T	
Emergency controls	Selection	T/P	
Pressure and flow	Standing, working pressure	T/P	
Commissioning/decommissioning	Risk assessment Method statement Environment	T/P	
Meter regulators and filters	Principles of operation Maintenance Recorders By-passes Data loggers Smart metering Correctors	T/P	
Testing and purging	Scope of IGEN documents Determining the test method General considerations Calculation Risk assessment	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P	

INDUSTRIAL PROCESSES AND PLANT EQUIPMENT

SUBJECTS	SCOPE	THEORY (T) AND PRACTICAL (P)	MINIMUM DURATION
Combustion and it's control	Combustion principles Burners Flame picture Flue gas analysis Safety devices and controls	T/P	6 MONTHS
Commissioning gas fired plant	Planning Inspection Dry run checks Live run checks Chimney testing Combustion performance Air quality checks	T/P	
Industry unsafe situations procedures	Classification of situations Actions to take Responsible person	T/P	

APPENDIX 3 : FURTHER GUIDANCE

Guidance for the new entrant, the training organisation and the recogniser of training is to be provided and as a minimum shall include:

- Education requirements for new entrants
Applicants will normally have gained a minimum of 2 GCSEs (grade C) or equivalent, preferably English, mathematics or relevant/appropriate experience or an entry assessment
- Information for the new entrant about the opportunities in the industry following successful completion of the training
- Responsibilities of the training organisation
- Responsibilities of the new entrant
- Task log (see Appendix 5)
- Transfer of training to other recognised training organisations

In the event of the training organisation being unable to provide the remaining training or new entrant advocates to use another training organisation part way through the course, for example has relocated to another part of the UK the transfer of training is allowed. The successful completion of training under Part 1 may be taken and used as evidence to another training organisation to allow training to continue.

APPENDIX 4 : REFERENCES, GLOSSARY, ACRONYMS AND DEFINITIONS

REFERENCES

L56 Safety in the Installation and Use of Gas Systems and Appliances - Approved Code of Practice
IGEM/IG/1 Standards of training in gas work.

GLOSSARY AND ACRONYMS

ACS	Nationally Accredited Certification Scheme for Individual Gas Fitting Operatives
CO	carbon monoxide
CO ₂	carbon dioxide
EUA	Energy and Utilities Alliance
CEDA	Catering Equipment Distributors Association
CESA	Catering Equipment Suppliers Association
CITB	Construction Industry Training Board
ICOM	The Industrial and Commercial Energy Association
IGEM	Institution of Gas Engineers and Managers
LPG	Liquefied Petroleum Gas
RIDDOR	Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RPD	rotary positive displacement
SLEAT	Society of Laundry Engineers & Allied Trades Limited
SCF	Standards Consultation Forum
SMB	Strategic Management Board
TB	technical bulletin
UKLPG	UK LPG Trade Association.

DEFINITIONS

class of persons	all gas engineering businesses, including self-employed gas engineers, are (subject to the limited exceptions in regulation 3(4)) required to be in membership of a class of persons approved by HSE, whether they carry out such work as their main or part activity. Gas engineers who are employed by a member of an approved class of persons but who do separate work on their own behalf need to be in membership of such class of persons, e.g. Gas Safe registered, in their own right. This definition is an extract from GS(I&U)R.
competence	is a combination of practical skill, training, knowledge and experience to carry out the job in hand safely, and ensuring the installation is left in a safe condition for use.
industry recognised	the Standards Setting Body is required to recognise all training for developers/providers wishing to provide training for new entrants working under the GS(I&U)R and for training providers wishing to become recognised to offer training for those working outside the scope of GS(I&U)R.
mentor	a person with the appropriate knowledge and experience to support a new entrant to the gas industry during their training.
mentoring	a person(s) with the appropriate knowledge and experience supporting the new entrant in their training.

new entrant	a person wishing to achieve a recognised industry qualification to become eligible to sit accredited assessments required by Gas Safe Register, see IGEM/IG/1.
non domestic utilisation sector	those premises containing gas installations which are downstream of the Natural Gas Network or LPG installation emergency control valve other than domestic premises.
‘Off the job’ training	training that is undertaken in a classroom or workshop (which may be indoor or outdoor).
‘On the job’ training	training that is undertaken in a workplace such as an industrial or commercial premises (it may be simulated in a workshop under certain limited conditions).
portfolio	a collection of records which will be written, copies of documents, reports or test papers and photographs that is evidence of the work experience and/or work that the new entrant has undertaken.
Standards Consultation Forum	ensures that employers and stakeholders allied to the gas industry are appropriately consulted as an integral part of the process of competence standard setting arising from proposals to amend or introduce new assessment mechanisms and associated aspects for businesses seeking registration on the Gas Safe Register. For membership details contact Energy and Utility Skills Ltd.
Strategic Management Board	ensures that the mechanisms and processes established for the production, maintenance and implementation of competence criteria and associated assessment specifications, operate in an effective and efficient manner to align fully with the Legislative requirements of the Gas Safety (Installation and Use) Regulations 1998 and subsequent registration requirements for consumer safety. For details, contact Energy and Utility Skills Ltd.
supervised	in the context of this document means ‘the work experienced by the new entrant is either being carried out by the competent person/Gas Safe registered engineer and watched by the new entrant, but being explained and coached or when appropriate being undertaken by the new entrant whilst overseen and checked by the supervisor. The supervisor being responsible and in control of the work at all times’.
workplace	an industrial or commercial premises or a simulated premise within a training establishment.

APPENDIX 5 : TASK LOG FOR PART 1 `ON THE JOB' ACTIVITIES

An example:

Name:																
Organisation:																
Address:																
TASK DESCRIPTION	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	VERIFIED
Legislation and basic safety																
1 Electricity																
Pressure and flow																
2 Measure of pressure																
3 Control of pressure																
Pipework installation																
4 Material																
5 Jointing of pipework																
6 Use of temporary continuity bonds																
Purging and testing																
7 Tightness test																
8 Let-by test																
9 Purging																
Basic metering installation																
10 Emergency control valves.																
11 Meter regulators and filters																
12 Metering (basic)																
Industry unsafe situations procedure																
13 Classification of situations																
14 Actions to undertake																
15 RIDDOR																

APPENDIX 6 : TASK LOG FOR PART 2 `OFF THE JOB` ACTIVITIES – SECTOR SPECIFIC LEGISLATION AND STANDARDS

An example:

Name:																
Organisation:																
Address:																
TASK DESCRIPTION	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	VERIFIED
Legislation and basic safety																
1 Electricity																
Pressure and flow																
2 Measure of pressure																
3 Control of pressure																
Pipework installation																
4 Material																
5 Jointing of pipework																
6 Use of temporary continuity bonds																
Purging and testing																
7 Tightness test																
8 Let-by test																
9 Purging																
Basic metering installation																
10 Emergency control valves.																
11 Meter regulators and filters																
12 Metering (basic)																
Industry unsafe situations procedure																
13 Classification of situations																
14 Actions to undertake																
15 RIDDOR																

APPENDIX 7 : TASK LOG FOR PART 2 `ON THE JOB' ACTIVITIES – SECTOR SPECIFIC

An example:

Name:																
Organisation:																
Address:																
TASK DESCRIPTION	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	JOB NO.	VERIFIED
1 Work area checked and prepared for safe operation																
2 Appropriate tools, equipment and materials are selected and checked																
Visual examinations are made to verify suitability and conformity of existing:																
3 installation pipework																
4 meter installation																
5 ventilation requirements																
6 flue and chimney installation and components																
7 rooms and/or location																
8 fire precautions (clearances required for appliances and chimneys for safety)																
Preliminary checks and tests are completed:																
9 existing gas installations are tested for tightness																
10 low pressure supply																
11 any gas escapes are identified, located and repaired																
Flue flow tests are completed on existing open chimney systems, as applicable:																
12 metallic double wall chimneys																
13 brick built chimneys																
14 any open chimney defects are repaired or unsafe procedures implemented																
Existing gas pipework is replaced or extended:																
15 use of temporary continuity bond before breaking into supply																
16 meter is correctly removed and made safe																
17 new copper pipework is installed in accordance with BS 6891/IGEM/UP/2																
18 new steel pipework is installed in accordance with BS 6891/IGEM/UP/2																
19 meter is re-connected																

20 installation is tested for tightness																				
21 installation is purged																				
22 Existing appliances are relit and visually inspected for gas safety																				
23 Installation of new appliances (see separate appliance summary log)																				
24 Appliance operating pressure checked																				
25 Appliance heat input checked using gas meter test dial																				
Open chimney system performance checked:																				
26 flue flow and spillage test																				
27 Flue gas analysis equipment checked for calibration and correctly used																				
Appliance gas safety control devices checked for correct operation:																				
28 flame rectification																				
29 gas taps																				
30 multifunctional controls																				
31 regulators																				
32 safety shut off valve																				
33 thermostats																				
34 pressure switch																				
35 safety interlock																				
36 air flow proving device																				
37 solenoid valve																				
38 ignition device																				
39 low pressure cut off																				
40 non-return valve																				
41 relay valve																				
42 UV flame failure device																				
Gas industry unsafe installation procedures are implemented:																				
43 ID situation is identified																				
44 AR situation is identified																				
45 NCS situation is identified (including combinations upgraded to AR)																				
46 appropriate warning notices and labels are used																				
47 appropriate action is taken (disconnect or isolate)																				
48 All necessary documentation is completed, including RIDDOR reporting procedure																				

BLANK PAGE



Institution of Gas Engineers and Managers

IGEM House
High Street
Kegworth
Derbyshire
DE74 2DA

T 0844 375 4436
F 01509 678198
E general@igem.org.uk
W www.igem.org.uk

April 2016