

Course outline: 113 Workshop E102A
UEENEEE102A - Fabricate, assemble and dismantle utilities industry components

Qualification:	Certificate III in Electrotechnology Electrician - UEE30811
Applicable to:	Learners, industry/employers, governments, community and Global Energy Training Solutions as the provider
Unit of competency:	Accessible from: http://training.gov.au/Training/Details/UEENEEE102A
Related policies:	<ul style="list-style-type: none"> Policy & Procedure 1 – Enrolment Policy Policy & Procedure 2 – Credit Transfer & Recognition of Prior Learning Policy & Procedure 3 – Learner Support Policy & Procedure 4 – Assessment Policy & Procedure 5 – Academic Misconduct Policy & Procedure 6 – Alcohol & Other Drugs Policy & Procedure 7 – Access, Equity & Diversity Policy & Procedure 8 – Vulnerable People Policy & Procedure 9 – Work, Health & Safety Policy & Procedure 10 – Incident, Injury & Rehabilitation Policy & Procedure 11 – Competency, & Qualification Assessment Decisions Policy & Procedure 12 – Complaints & Appeals Policy & Procedure 13 – Privacy Policy & Procedure 14 – Fees Policy & Procedure 15 – Industry & Employer Engagement Policy & Procedure 16 – Trainers & Assessors Policy & Procedure 17 – Administration & Other Staff Policy & Procedure 18 – Quality Assurance Policy & Procedure 19 – Business & Financial Risk Management Policy & Procedure 20 – Changes to Qualifications or Business Policy & Procedure 21 – Conflict of Interest Policy & Procedure 22 – Records Management Policy & Procedure 23 – Marketing & Advertising
Monitor and review:	Policy & Procedure 18 – Quality Assurance
Responsibility:	Ben Murphy – as Proprietor
Questions/queries:	Feedback and suggestions welcomed: office@gets.com.au (+61) 02 6262 0077

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1. Material requirements

- AS/NZS 3000:2007 incorporating amendment 1 and 2
- Scientific calculator, ruler, pens and pencils
- Note book
- Hand tools
- Covered footwear
- Internet access (provided)

2. Session summaries

Day 1	
Required Skills and Knowledge	<p>T1 Mechanical drawing interpretation and sketching encompassing:</p> <ul style="list-style-type: none"> • drawing standards and conventions used in drawings of mechanical components as specified in AS1100 • basic abbreviations and symbols used in drawing of mechanical components • interpretation of mechanical drawings commonly used in the electrotechnology industry (orthogonal projection, third angle - detail and assembly drawings, pictorial views) • laying out a drawing of mechanical components using engineering drawing convention. • freehand drawings of mechanical components showing all information needed for its manufacture/fabrication <p>T2 Workshop planning and materials encompassing:</p> <ul style="list-style-type: none"> • methods used to work safely in an industrial work environment. • typical non-electrical hazards in the workplace • control measures for dealing with hazards identified. • Conducting a risk assessment on a given work environment, documenting and assessing the risks identified • type of metallic and non-metallic materials used in the electrotechnology industry and application of the common materials • planning process <p>T3 Measuring and marking out encompassing:</p> <ul style="list-style-type: none"> • reasons for measuring and marking out • tools used for marking out • measuring and marking out a project accurately following correct procedures. • sustainable energy work practices related to reducing waste when marking out.

Day 2

Required Skills and Knowledge	T4	Holding and cutting encompassing: <ul style="list-style-type: none">• common tools for holding (bench vices, multi-grips, vice grips, wrenches).• common tools for cutting metallic and non-metallic material (hacksaws, wood saws, chisels, pliers, files)• procedure for using a range of tools for cutting, shaping, and finishing metallic and non-metallic materials• safety procedures when using holding and cutting tools
	T5	Drills and drilling encompassing: <ul style="list-style-type: none">• types of drills used in the electrotechnology industry• sharpening twist drills• drilling metallic and non-metallic components• safe use of a bench drill
	T6	Tapping and threading encompassing: <ul style="list-style-type: none">• type and size of commonly used threads used in electrotechnology work• taps and tap wrenches• tapping metallic and non-metallic components• stock and die tools• threading metallic and non-metallic components

Day 3

Required Skills and Knowledge	T7	General Hand Tools encompassing: <ul style="list-style-type: none">• hammers used in electrotechnology work• screwdrivers used in electrotechnology work• spanners and sockets used in electrotechnology work• pliers used in electrotechnology work• assembling components applicable to electrotechnology industry using a variety of hand tools.
	T8	Joining techniques encompassing: <ul style="list-style-type: none">• types of machine screws and nuts• forms of welding (Oxy-acetylene, electric arc welding).• forms of brazing and hard soldering• process of soft soldering• joining components using machine screws• joining components using welding, brazing or soldering techniques
	T9	Portable electric power tools encompassing: <ul style="list-style-type: none">• portable electric power tools (grinders, drills, jigsaws, saws)• applications of portable electric power tools used in the electrotechnology work.• using portable power tools.• fabricating components using power tools (drills, grinders)

Day 4

Required Skills and Knowledge	T10	Sheet metal work encompassing: <ul style="list-style-type: none">• types of sheet metal materials used in the electrotechnology work.• names and applications of the types of fabrication materials.• tools used with sheet metals in electrotechnology work (hacksaw, tinsnips, guillotines, punches, notching tools, folding machines)• techniques used in fabricating sheet metal (cutting, bending, drilling/punching, joining, cutting mitres).
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	<ul style="list-style-type: none"> marking out, cutting, bending, drilling and/or cutting and/or punching holes, joining and cutting mitred joints using sheet metal. sustainable energy work practices to reducing waste when fabricating using sheet metal. fabricating components using sheet metal and fabrication tools.
T11	<p>Low tolerance measurement encompassing:</p> <ul style="list-style-type: none"> tolerance techniques in using vernier callipers techniques in using micrometers. using vernier callipers to measure engineering components using micrometers to measuring engineering components
T12	<p>Dismantling and assembly techniques encompassing:</p> <ul style="list-style-type: none"> tools used in dismantling and assembling electrotechnology equipment (spanners, screwdrivers, bearing pullers, etc). procedures for ensuring the safe treatment of dismantled components. dismantling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures. assembling electrical, electronic, instrumentation or refrigeration/air conditioning piece of equipment using correct procedures.

3. Elements and Performance Criteria

Elements and Performance Criteria require practice and demonstration in the work place.

Element		Performance Criteria	Work Performance
1:Prepare for dismantling, assembling and fabrication work.	1.1	OHS procedures for a given work area are obtained and understood through established routines and procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.2	Established OHS risk control measures and procedures in preparation for the work are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.3	Safety hazard not previously identified are reported and advice on risk control measures is sought from the work supervisor.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.4	The nature of the work is obtained from documentation and from work supervisor to establish the scope of work to be undertaken.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.5	Advice is sought from the work supervisor to ensure the work is coordinated effectively with others.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.6	Materials required for the work are obtained in accordance with established routines and procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.7	Tools, equipment and measuring devices needed to carry out the work are obtained and checked for correct operation and safety.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.8	Cutting tools such as drills and chisels are sharpened to suit the material on which they are to be used.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	1.9	Established OHS risk control measures and procedures for carrying	<input type="checkbox"/> Satisfactory

		out the work are followed.	<input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
2:Dismantle and assemble utilities industry apparatus	2.1	Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.2	Appropriate tools are selected and used correctly and safely in dismantling and assembling apparatus.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.3	Manufacturer apparatus dismantling and assembling guides are used where applicable.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.4	Components are marked or tagged during the dismantling to help ensure correct and efficient reassembly.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.5	Dismantled components and parts are stored to protect them against loss or damage.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.6	Apparatus is dismantled and assembled efficiently without waste of materials and energy and/or damage to apparatus and the surrounding environment or services.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.7	Procedures for referring non-routine events to immediate supervisor for directions are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.8	Routine quality checks are carried out in accordance with work instructions.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.9	OHS risk control work completion measures and procedures are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.10	Work site is cleaned and made safe in accordance with established procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	2.11	Work supervisor is notified of the completion of the work in accordance with established procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
3:Fabricate utilities industry components	3.1	Established OHS risk control measures and procedures for carrying out the work are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.2	Circuits/machines/plant are checked as being isolated where necessary in strict accordance OHS requirements and procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.3	Appropriate tools are selected and used correctly and safely in fabricating components.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.4	Drawings and instruction for the fabrication of components are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.5	Component dimensions are determined directly or by calculation from information given in job drawings and instructions.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed

	3.6	Components are fabricated efficiently without waste of materials and energy and/or damage to the surrounding environment or services.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.7	Procedures for referring non-routine events to immediate supervisor for directions are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.8	Routine quality checks are carried out in accordance with work instructions.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.9	OHS risk control work completion measures and procedures are followed.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.10	Work site is cleaned and made safe in accordance with established procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed
	3.11	Work supervisor is notified of the completion of the work in accordance with established procedures.	<input type="checkbox"/> Satisfactory <input type="checkbox"/> Needs improvement <input type="checkbox"/> Not performed

4. Assessments

Assessment	When	Satisfactory mark/outcome
Theory assessment 1	Day 4	70%
Practical assessment 1	Day 4	100%
Workplace Observation	After theory and practical assessments	Must be valid, sufficient, authentic and current
Employer Competency report		
Structured workplace experience interview		
Note: Once all theory, practical and on-site assessments are complete, competency assessment decisions can be made in conjunction with the learner, employer and registered training organisation.		

5. Version control

Version	Date of release	Author	Authorised by	Position	Rational for change
V1	5/10/2015	Ben Murphy	Ben Murphy	Proprietor	Initial release
V2	7/2/2017	Ben Murphy	Ben Murphy	Proprietor	Added Elements and Performance Criteria