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| **Document Details** | | | |
| **Version Number** | **Last Updated** | **Developed/Edited By** | **Validation Date** |
| **3** | **28/1/2016** | **P.Washington/G Fielding** | **TBA** |

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| **Training Package Title and National Code:** | | **UEE11 Electrotechnology Training Package**  **(Release 4)** | | |
| **Qualification Title:** | **Certificate III in Electrotechnology Electrician** | | **Pathway No.** | **NA** |
| **Qualification National ID:** | **UEE30811** | | **Qualification State ID:** | **A123** |

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| **Unit** | | | |
| **National ID** | **State ID** | **Title** | **Release** |
| UEENEEG109A | S7326 | Develop and Connect Electrical Control Circuits | 3 |

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| **Delivery Method** | **: Face to face** | | | |
| **Training Room/Location:** | | **Midland Campus** | **Dates/Times:** | **29/02/2016 - 8am** |

**Pre-requisites/Co-requisites**

**E101A,E102A,E104A,E105A,E107A,G006A,G101A,G102A,G106A,G063A**

**Student Learning Resources – Required**

**AS/NZS 3000 Wiring Rules**

**Student Resource book G109**

**Motor control circuit boards Motor control fault panels Multi-Meters**

**Scientific non-programmable calculator.**

**Pens, pencil, ruler, eraser, highlighter, coloured pencils**

**PLC/ computer**

**Resources – Optional**

**Electrical principles volume 2, 6th edition [Jenneson, Harper & Moore]**

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| **Lecturer’s Details** | |
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| **Name:** | **Phone:** 93746394 |
| **Email:** [Geoff.Fielding@polytechnic.wa.edu.au](mailto:Geoff.Fielding@polytechnic.wa.edu.au) | **Location:** Midland Campus |

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| **Delivery Program** | | | |
| **Date/Session** | **Topic** | **Student Activity and/or Assessment Task** | ***Identify the Unit and element being addressed.*** |
| **Day 1-1** | Introduction to unit. |  |  |
| 1-2 | Motor control requirements | Portfolio /wiring rules | T9 |
| 1-3 | Electrical circuit symbols and conventions | Complete relevant sections of  Workbook  Worksheets 2, 2A, 2B.Project 4 | T1  T2 |
| 1-4 | Review days subjects | Portfolio |  |
| **Day 2-1** | DOL control and power | Complete relevant sections of workbook Worksheet 1, project  3 & 6 | T1  T2 |
| 2--2 | Design, connect and test control circuits DOL | Complete relevant sections of workbook .worksheet 7 , project 9 | T1  T2  T7 |
| 2-3 | Design, connect motor control and power circuit drawing for Two Stop-Start stations | Produce circuit drawings and test procedures for circuit.  Connect and test designed circuit. Project 10, [portfolio] | T3  T5 |
| 2-4 | Review days subjects | portfolio |
| **Day 3-1** | Design motor control and power circuit drawing for Stop-Start with timer | Produce circuit drawings and test procedures for circuit.  Connect and test designed circuit. Project 11 , [also in portfolio] | T3  T4  T5 |
| 3-2 | Circuit connection and testing |
| 3-3 | Design, connect motor control and power circuit drawing for Interlocking relays | Produce circuit drawings and test procedures for circuit  .Connect and test designed circuit. Project 12, | T3  T6  T5 |
| 3-4 | Review days subjects | portfolio |
| **Day 4-1** | Design motor control and power circuit drawing for forward/reverse | Produce circuit drawings and test procedures for circuit.  Connect and test designed circuit. Project 13, [also in portfolio] | T3  T5  T11 |
| 4-2 | Circuit connection and testing |
| 4-3 | Design, connect motor control and power circuit drawing for Forward/Reverse jogging | Produce circuit drawings and test procedures for circuit.  Connect and test designed circuit. Project 14, | T3  T5  T6  T11 |
| 4-4 | Review days subjects | portfolio |

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| **Day 5-1** | Converting diagrams | Complete relevant sections of  Workbook  Worksheets 17 & projects 18, 19. | T1 |
| 5-2 | Fault finding in control circuits | Complete relevant sections of  Workbook  Worksheets 4-1 | T3 |
| 5-3 | Fault finding in control circuits | Find faults in motor control panels  Worksheet 22,project 23, | T3/ T10 |
| 5-4 | **Skill assessment** | **Skill based assessment [design**  **,connect and test relay controlled circuit from given circuit description]** |  |
| **Day 6-1** | transducers, microprocessors and programmable relays | Read pages 65 – 66 and section  16 in resource G109A  Worksheet 25 | T7/ T8 |
| 6-2 | WINDLDR v7 | Information in resource handout | T8 |
| 6-3 | Program cascade timer, Interlocking and star/delta control circuits. Test operation of each circuit. | Program, test and connect  circuits.  [Star/ Delta also in portfolio] | T4/,T6/,T7/,T8/,T9/,T10 |
| 6-4 | Review days subjects | portfolio |
| **Day 7-1** | Down loading of circuits to CPU and connection of inputs and outputs at contactor panels. | |
| 7-2 |
| 7-3 | Three phase motor speed control & current limiting starters | Section 14,worksheet 24 in resource G109A  Students to read pages 152-160  Electrical principals Vol 2, 6th  Edition. portfolio | T10 |
| 7-4 | Three phase motor braking | Read section 11 in resource  G109A, also read pages 160-163  Electrical principals Vol 2, 6th  Edition.  Projects 20 & 21 Resource G109A | T11 |
| **Day 8-1** | Motor start and motor braking circuits | Students to program and connect control circuit for Autotransformer starter and DC injection brake circuit on PLC. | T9/,T10  T8/,T11 |
| 8-2 |
| 8-3 | VSD principles ,connection and testing | Students to read pages 157-158  Electrical principals Vol 2, 6th  Edition  Lecturer demonstration of VSD, students program and take results Skill activity 25 in resource G109A | T9/, T12 |
| 8-4 | Review days subjects | portfolio |
| **Skill assessment** | **Develop and test PLC controlled motor circuit.** |
| **Theory assessment** | **75% Pass Mark Required** |

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| **Day 9-1** | **Portfolio** | Complete portfolio |  |
| 9-2 |
| 9-3  9-4 | **Finishing off all Practical’s and Assessments** | **Re-sit’s if required for the UEE G109A Theory & UEE G109A Practical Assessments** |

Please note: This program is to be used as a guide and may be adapted to meet the needs of students. You will be notified of changes as they occur.

**Assessment Requirements**

You will be assessed by:

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| **Assessment Method (Tools)** | **Assessment Task Explanation** |
| **Portfolio Assignment** | 100% required pass mark |
| **Portfolio of Evidence** | Candidate is to complete the FOUR wiring practicals as given by the lecturer.  You should aim to complete all **FOUR** (4) wiring practicals in **FOUR** days.  All assessments **must** be completed by day 9. |
| **Theory Exam** | Candidate is to attempt a Theory Exam, 75% required pass mark. |
| **Skill 1st RELAY LOGIC** | Design, install and test forward , Primary Resistance Starter control and power for 3 phase motor |
| **Skill 2nd PLC** | Program and monitor operation of a timer controlled circuit. Convert circuit diagram to ladder logic. |
| **Direct**  **Observation** | Candidate is observed during the FOUR Wiring Practicals, to “Develop & Connect Control Circuits” is shown. |

**Your lecturer will provide more details of the requirements of each assessment method (tools) at a later date**.

**Additional Information**

The following information is to be read in conjunction with the Polytechnic West Student Handbook and/or

Course Information Booklet.

Please see Course Information Booklet or the Polytechnic West Student Handbook for more details on Recognition of Prior Learning. The handbook will also provide information regarding appeal and grievance procedures as well as support services available to students with special needs eg disability, language and literacy and or other.

***Absences***

If you are unable to attend any class or assessment session you must inform your lecturer as soon as possible.

If you miss an assessment due to illness, please provide your lecturer with a medical certificate in order to negotiate an alternate time for the assessment.

***Plagiarism***

Plagiarism is using another person's ideas and words without clearly acknowledging the source of the information. At Polytechnic West it is not acceptable to submit an assessment that is based on another student's work and claim it as your own. Students who submit an assessment that is significantly or recognizably the same or similar in content as submitted by another student (current or past) may have to submit another assessment.

Assessment Resit/Resubmission

You may qualify for (1) re-assessment per each assessment event when:

* you have made a reasonable attempt to complete the assessment satisfactorily

AND

* you have submitted the original assessment by the due date

OR

* you have attended and participated in the original assessment event

In the case of a re-assessment opportunity, your lecturer will give you a due date for your second attempt. Should you not achieve a Satisfactory result on the second attempt, you will need to re-enrol (R) in the unit.

In certain situations a re-assessment is not possible; please refer to your assessment instructions.