**SUMMARY OF UNITS OF COMPENTENCY**

**INDUSTRIAL AUTOMATION AND ROBOTICS LEVEL 6**

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| **MODULE** | **UNITS** | | | |
| **UNIT**  **CATEGORY** | **UNIT CODE** | **UNIT NAME** | **DURATION(Hours)** |
| **ONE (I)** | CORE | 0714 351 09A | Industrial Automation and Robotic Systems Operations | 250 |
| CORE | 0714 351 11A | Product Quality Maintenance | 140 |
| **SUB TOTAL** | | | **390** |
| **TWO (II)** | **CORE** | 0714 351 10A | Industrial Automation and Robotic Systems Maintenance | 220 |
| **SUB TOTAL** | | | **220** |
| **THREE(III)** | **BASIC** | 0611 441 01A | Digital Literacy | 40 |
| **COMMON** | 0541 441 05A | Engineering mathematics | 150 |
| **CORE** | 0714 451 12A | Industrial automation electrical systems installation and maintenance | 170 |
| **SUB TOTAL** | | | **360** |
| **FOUR(IV)** | **CORE** | 0714 451 13A | Stand-alone controlled systems installation and maintenance. | 200 |
| **CORE** | 0714 451 14A | Pneumatic System Installation and Maintenance | 220 |
| **SUB TOTAL** | | | **420** |
| **FIVE(V)** | **BASIC** | 0031 441 02A | Communication Skills | 40 |
| **BASIC** | 0413 441 04A | Entrepreneurial Skills | 40 |
| **BASIC** | 0417 441 03A | Work Ethics and Practices | 40 |
| **CORE** | 0714 451 15A | Hydraulic systems installation and maintenance. | 220 |
|  | **SUB TOTAL** | | | **340** |
| **SIX(VI)** | **COMMON** | 0715 541 06A | Engineering mechanics | 150 |
| **COMMON** | 0713 541 07A | Electrical and electronics principles | 150 |
| **CORE** | 0714 551 16A | Electrical drives installation and maintenance | 180 |
|  | **SUB TOTAL** | | | 480 |
| **SEVEN(VII)** | **COMMON** | 0732 551 08A | Computer aided drawing | 150 |
| **CORE** | 0714 551 17A | Programmable logic Controllers installation and maintenance. | 220 |
|  | **SUB TOTAL** | | | 370 |
| **EIGHT(VIII)** | **CORE** | 0714 551 18A | Distributed control systems installation and maintenance. | 240 |
| **CORE** | 0714 551 19A | Industrial robotic systems installation and maintenance. | 220 |
|  | **SUB TOTAL** | | | 460 |
|  | **INDUSTRIAL ATTACHEMENT** | | | 480 |
|  |  |  |  | **Grand Total:**  **3520HRS** |

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| **MODULE ONE** | | | | | | | | |
| **UNIT CODE** | | **UNIT NAME** | **ELEMENTS** | | | | **DURATION (HOURS)** | |
| 0714 351 01A | | Industrial Automation and Robotic Systems Operation I | Operate computer devices | | | | **30** | |
| Apply digital electronic principles | | | | **30** | |
| Control industrial automation and robotic system | | | | **80** | |
| Monitor industrial automation and robotic system robotic system parameters | | | | **90** | |
| Set industrial automation and robotic system parameters | | | | **70** | |
|  | | | | **TOTAL 300 HRS** | |
| 0714 351 03A | | Product Quality Maintenance I | Conduct product quality checks | | | | **40** | |
| Document production quality activities | | | | **40** | |
| Adjust industrial automation and robotics machinery settings | | | | **150** | |
|  | |  |  | | | | **TOTAL 230 HRS** | |
| **MODULE TWO** | | | | | | | | |
| 0714 351 02A | | Industrial Automation and Robotic Systems Maintenance I | Apply workshop safety | | | | **40** | |
| Perform housekeeping | | | | 30 | |
| Carry out industrial automation and robotic system troubleshooting | | | | 130 | |
| Replace industrial automation and robotic system parts | | | | 110 | |
|  | | | | **TOTAL 310 HRS** | |
| **MODULE THREE** | | | | | | | | |
| 0611 541 01A | Digital Literacy | | | Solve Tasks Using Office Suite | | **10** | | |
| Manage Data and Information | | **10** | | |
| Perform Online Communication and Collaborations | | **10** | | |
| Apply Cybersecurity Skills | | **10** | | |
| Perform Online Jobs | | **10** | | |
| Apply job entry techniques. | | **10** | | |
|  |  | | |  | | **TOTAL 60 HRS** | | |
| 0541 441 06A | Apply engineering mathematics | | | Apply algebra | | **20** | | |
| Apply trigonometric functions | | **30** | | |
| Apply coordinate geometry | | **20** | | |
| Carry out mensuration | | **10** | | |
| Apply statistics | | **30** | | |
| Apply vector theorem | | **20** | | |
| Apply matrices | | **20** | | |
|  |  | | |  | | **TOTAL 150 HRS** | | |
| 0714 551 11A | Industrial automation electrical systems installation and maintenance | | | Conduct industrial automation electrical system site survey. | | **30** | | |
| Plan industrial automation electrical system installation | | **50** | | |
| Install industrial automation electrical system | | **50** | | |
| Maintain industrial automation electrical system | | **40** | | |
|  |  | | |  | | **TOTAL 170 HRS** | | |
| **MODULE FOUR** | | | | | | | | |
| 0714 551 13A | Standalone control systems installation and maintenance | | | Conduct stand-alone control system site survey | | **30** | | |
| Plan stand-alone control system installation | | **50** | | |
| Install stand-alone control systems | | **70** | | |
| Maintain stand-alone control systems | | **50** | | |
|  |  | | |  | | **TOTAL 200 HRS** | | |
| 0714 551 16A | Pneumatic system installation and maintenance | | | Apply knowledge of perfect gases | | **10** | | |
| Operate air compressors | | **10** | | |
| Conduct pneumatic system site survey | | **30** | | |
| Plan pneumatic system installation | | **50** | | |
| Install pneumatic systems | | **70** | | |
| Maintain pneumatic systems | | **50** | | |
|  |  | | |  | | **TOTAL 220 HRS** | | |
| **MODULE FIVE (V)** | | | | | | | | |
| 0031 441 02A | Communication Skills | | | Apply communication channels. | | **10** | | |
| Apply written communication skills. | | **10** | | |
| Apply non-verbal skills. | | **5** | | |
| Apply oral communication skills. | | **5** | | |
| Apply group communication skills. | | **10** | | |
|  | | **TOTAL 40 HRS** | | |
| 0417 541 03A | Work Ethics and Practices | | | Apply self-management skills | | **5** | | |
| Promote ethical practices and values | | **10** | | |
| Promote Teamwork | | **10** | | |
| Maintain professional and personal development | | **10** | | |
| Apply Problem-solving skills | | **10** | | |
| Promote Customer care. | | **5** | | |
| **TOTAL HOURS** | | **50** | | |
| 0413 541 04A | Entrepreneurial Skills | | | Apply financial literacy | | **10** | | |
| Apply the entrepreneurial concept | | **10** | | |
| Identify entrepreneurship opportunities | | **10** | | |
| Apply business legal aspects | | **10** | | |
| Innovate Business Strategies | | **10** | | |
| Develop business plan | | **10** | | |
| **TOTAL HOURS** | | **60** | | |
| 0714 551 17A | Hydraulic systems installation and maintenance | | | Apply heat transfer and heat exchangers in fluid | | **10** | | |
| Apply knowledge of flow of fluids | | **10** | | |
| Apply knowledge of viscous flow of fluids | | **10** | | |
| Operate fluid pumps | | **10** | | |
| Conduct hydraulic system site survey | | **30** | | |
| Plan hydraulic system installation | | **30** | | |
| Install hydraulic system | | **70** | | |
| Maintain hydraulic system | | **50** | | |
|  | | **TOTAL 220 HRS** | | |
| **MODULE SIX (VI)** | | | | | | | | |
| 0715 541 08A | | Engineering mechanics | | | Apply forces and moments in a mechanical system | | | **10** |
| Apply friction principles in mechanical systems | | | **10** |
| Apply kinematics of motion in mechanical systems | | | **10** |
| Apply mechanical work-energy theorem | | | **10** |
| Apply kinetics of motion in mechanical systems | | | **10** |
| Apply law of machines | | | **10** |
| Determine loading conditions in mechanical systems | | | **10** |
| Apply simple mechanisms | | | **10** |
| Design belts, ropes and chain drives | | | **15** |
| Design toothed gears and gear trains | | | **15** |
| Design mechanical rotor dynamic machines | | | **10** |
| Apply stress and strain concepts in mechanical systems | | | **10** |
| Apply simple bending theory in mechanical systems | | | **10** |
| Apply torsion theory in mechanical systems | | | **10** |
| **TOTAL HOURS** | | | **150** |
| 0713 541 09A | | Electrical and Electronic principles | | | Use the concept of basic Electrical quantities | | | **10** |
| Apply DC and AC circuits | | | **20** |
| Apply Safety requirements for electricity | | | **20** |
| Apply understanding of electronics | | | **20** |
| Apply Magnetism and electromagnetism | | | **20** |
| Perform Single and three phase power supply | | | **20** |
| Apply Sensors and transducers principles | | | **20** |
| Apply Concept of cells and batteries | | | **20** |
| **TOTAL HOURS** | | | **150** |
| 0714 551 14A | | Electrical drives installation and maintenance | | | Conduct electrical drives site survey | | | **40** |
| Plan electrical drives installation | | | **40** |
| Install electrical drives | | | **50** |
| Maintain electrical drives | | | **50** |
| **TOTAL HOURS** | | | **180** |
| **MODULE SEVEN (VII)** | | | | | | | | |
| 0732 551 07A | | Computer aided drawing | | | Navigate CAD software | | | **25** |
| Produce geometric drawings | | | **25** |
| Produce pictorial drawings | | | **25** |
| Produce orthographic drawings. | | | **25** |
| Produce assembly drawings | | | **25** |
| Design mechanical components | | | **25** |
| **TOTAL HOURS** | | | **150** |
| 0714 551 12A | | Programmable logic Controllers installation and maintenance. | | | Conduct programmable logic controller site survey | | | **40** |
| Develop PLC Program | | | **50** |
| Plan Programmable Logic Controllers installation | | | **40** |
| Maintain PLC system | | | **45** |
| Maintain Programmable Logic Controllers | | | **45** |
| **TOTAL HOURS** | | | **220** |
| **MODULE EIGHT (VIII)** | | | | | | | | |
| 0714 551 15A | | Distributed control systems installation and maintenance. | | | Conduct distributed control system site survey | | | **60** |
| Plan distributed control system installation | | | **60** |
| Install distributed control system | | | **60** |
| Maintain distributed control system | | | **60** |
| **TOTAL HOURS** | | | **240** |
| 0714 551 18A | | Industrial robotic systems installation and maintenance. | | | Conduct industrial robotic systems site survey | | | **40** |
| Develop robot programs | | | **50** |
| Plan industrial robotic systems installation | | | **40** |
| Install industrial robotic system | | | **50** |
| Maintain industrial robotic systems | | | **40** |
| **TOTAL HOURS** | | | **220** |
|  | |  | | | **INDUSTRIAL ATTACHEMENT** | | | **480** |
| **GRAND TOTAL HOURS** | | | | | | | | **3520 HOURS** |