**SUMMARY COURSE PLANNER LEVEL 6**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **MODULE** | **UNITS** | | | |  |
| **UNIT CATEGORY** | **UNIT CODE** | **UNIT NAME** | **DURATION(Hours)** | **CREDIT FACTOR** |
| **ONE (I)** | **COMMON** | 0541 541 05A | Apply engineering mathematics | 150 | 15.0 |
| **COMMON** | 0715 541 06A | Apply thermodynamics and fluid mechanics principles | 150 | 15.0 |
| **CORE** | 0715 551 10A | Electromechanical systems design | 200 | 20.0 |
| **TOTAL** | | | 500 HRS | 48.0 |
|  |  |  |  |  |  |
| **TWO (II)** | **COMMON** | 0732 551 09A | Perform computer aided drawing | 180 | 18.0 |
| **CORE** | 0715 551 11A | Electromechanical systems installation and maintenance | 200 | 20.0 |
| **BASIC** | 0031 541 02A | Apply communication skills | 40 | 4.0 |
| **TOTAL** | | | **420 HRS** | **44.0** |
| **THREE(III)** | **CORE** | 0715 551 12A | Hydraulic and pneumatic systems installation and maintenance | 280 | 28.0 |
| **COMMON** | 0713 541 08A | APPLY ELECTRICAL AND ELECTRONICS PRINCIPLES | 180 | 18.0 |
| **TOTAL** | | | **460 HRS** | **46.0** |
| **FOUR(IV)** | **CORE** | 0715 551 13A | Stand-alone controllers’ installation and maintenance | 200 | 20.0 |
| **CORE** | 0715 551 14A | PLC systems installation and maintenance | 240 | 24.0 |
|  | **TOTAL** | | | **440 HRS** | **44.0** |
| **FIVE (V)** | **CORE** | 0715 551 15A | Robotic systems installation and maintenance | 240 | 24.0 |
| **CORE** | 0715 551 16A | Supervisory control and data acquisition (SCADA) systems installation and maintenance | 200 | 20.0 |
| **TOTAL** | | | **440 HRS** | **44.0** |
| **SIX (VI)** | **COMMON** | 0715 541 07A | Apply engineering mechanics principles | 150 | 15.0 |
| **CORE** | 0715 551 17A | Electrical machines and mechanical drives installation | 220 | 22.0 |
| **BASIC** | 0611 551 01A | Apply Digital Literacy | 70 | 7.0 |
| **TOTAL** | | | **440 HRS** | **44.0** |
| **SEVEN (VII)** | **CORE** | 0715 551 18A | Fabrication machinery operation | 300 | 30.0 |
| **BASIC** | 0417 541 03A | Apply Work Ethics and Practices | 50 | 5.0 |
| **BASIC** | 0413 541 04A | Apply entrepreneurial skills | 60 | 6.0 |
| **TOTAL** | | | **410 HRS** | **41.0** |
| **INDUSTRIAL ATTACHEMENT** | | | **480 HRS** | **48.0** |
|  | **COURSE DURATION** | | | **3590 HRS** | **359.0** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **UNIT CODE** | **UNIT NAME** | **ELEMENTS** | **DURATION(Hours)** | **CREDIT FACTOR** |
| **MODULE ONE** | | | | |
| 0541 541 06A | Apply engineering mathematics | Apply algebra | 15 | 1.5 |
| Apply trigonometric and hyperbolic functions | 15 | 1.5 |
| Apply complex numbers | 15 | 1.5 |
| Perform coordinate geometry | 15 | 1.5 |
| Carry out binomial expansion | 15 | 1.5 |
| Apply calculus | 15 | 1.5 |
| Carry out mensuration | 15 | 1.5 |
| Apply statistics and probability | 15 | 1.5 |
| Apply vector theorem | 15 | 1.5 |
| Apply matrices | 15 | 1.5 |
| TOTAL | 150 | 15.0 |
| 0732 551 07A | Perform computer aided drawing | Operate computer devices | 25 | 2.5 |
| Navigate CAD software | 25 | 2.5 |
| Produce geometric drawings | 25 | 2.5 |
| Produce pictorial drawings | 25 | 2.5 |
| Produce orthographic drawings. | 30 | 3.0 |
| Produce assembly drawings | 25 | 2.5 |
| Design mechanical components | 25 | 2.5 |
| **TOTAL** | **180** | **18.0** |
| 0715 541 10A | Apply thermodynamics and fluid mechanics principles | To Apply thermodynamic processes | 15 | 1.5 |
| To Apply knowledge of perfect gases | 15 | 1.5 |
| To Apply knowledge of steam cycle | 15 | 1.5 |
| To Apply knowledge of fuel combustion | 15 | 1.5 |
| To Apply heat transfer and heat exchangers in fluid | 15 | 1.5 |
| To Operate air compressors | 15 | 1.5 |
| To Apply the knowledge of the flow of fluids | 15 | 1.5 |
| To Apply the knowledge of viscous flow of fluids | 15 | 1.5 |
| To Apply dimensional and models analysis fluids | 15 | 1.5 |
| To Operate fluid pumps | 15 | 1.5 |
| TOTAL | 150 | 15.0 |
| TOTAL | | | 480 | 40.0 |
| MODULE TWO | | | | |
| 0715 551 11A | Electromechanical systems design | Perform electromechanical system need analysis | 50 | 5.0 |
| Develop electromechanical systems conceptual design | 50 | 5.0 |
| Build electromechanical system conceptual design | 50 | 5.0 |
| Test electromechanical system prototype | 50 | 5.0 |
| **TOTAL** | **200** | **20.0** |
| 0715 551 12A | Electromechanical systems installation and maintenance | Prepare electromechanical system installation site | 60 | 6.0 |
| Mount electromechanical system components | 70 | 7.0 |
| Maintain electromechanical system. | 70 | 7.0 |
| **TOTAL** | **200** | **20.0** |
| 0031 541 02A | Apply communication skills | Apply communication channels. | 5 | 0.5 |
| Apply written communication skills. | 10 | 1.0 |
| Apply non-verbal skills. | 10 | 1.0 |
| Apply oral communication skills. | 10 | 1.0 |
| Apply group communication skills. | 5 | 0.5 |
| TOTAL | 40 | 4.0 |
| **TOTAL** | |  | **440 HRS** |  |
| **MODULE THREE** | | | | |
| 0715 551 13A | Hydraulic and pneumatic systems installation and maintenance | Prepare hydraulic and pneumatic system installation site | 80 | 8.0 |
| Mount hydraulic and pneumatic system components | 100 | 10.0 |
| Maintain hydraulic and pneumatic system | 100 | 10.0 |
| **TOTAL** | **280** | **28.0** |
| 0713 541 09A | Apply electronics and electronics principles | Apply safety requirements for electricity | 10 | 1.0 |
| Apply basic electrical quantities and principles | 20 | 2.0 |
| Apply D.C and A.C circuits in electrical installation | 20 | 2.0 |
| Apply magnetism and electromagnetism | 20 | 2.0 |
| Apply single and three phase power supply | 30 | 3.0 |
| Apply sensors and transducers principles | 20 | 2.0 |
| Apply principles of analogue electronics | 20 | 2.0 |
| Apply principles of digital electronics | 20 | 2.0 |
| Design electronic circuits | 20 | 2.0 |
| **TOTAL** | **180** | **18.0** |
| **TOTAL** | |  | **460 HRS** | **46.0** |
| **MODULE FOUR** | | | | |
| 0715 551 14A | Stand-alone controllers’ installation and maintenance | Mount stand-alone controller hardware | 50 | 5.0 |
| Interface stand-alone controller i/o | 50 | 5.0 |
| Program stand-alone controller | 50 | 5.0 |
| Maintain stand-alone controller | 50 | 5.0 |
| TOTAL | 200 | 20.0 |
| 0715 551 15A | PLC systems installation and maintenance | Mount PLC hardware | 60 | 6.0 |
| Interface PLC with I/O modules | 60 | 6.0 |
| Program PLC | 60 | 6.0 |
| Maintain PLC Systems | 60 | 6.0 |
| TOTAL | 240 | 24.0 |
| **TOTAL** | |  | **440 HRS** | **44.0** |
| **MODULE FIVE** | | | | |
| 0715 551 14A | Robotic systems installation and maintenance | Prepare robotic systems installation site | 60 | 6.0 |
| Assemble robotic system components | 60 | 6.0 |
| Program robotic system | 60 | 6.0 |
| Maintain robotic system | 60 | 6.0 |
| **TOTAL** | **240** | **24.0** |
| 0715 551 16A | Supervisory control and data acquisition (SCADA) systems installation and maintenance | Prepare SCADA system installation site | 50 | 5.0 |
| Mount SCADA system components | 50 | 5.0 |
| Program SCADA system | 50 | 5.0 |
| Maintain SCADA system | 50 | 5.0 |
| TOTAL | 200 | 20.0 |
| **TOTAL** | |  | **440 HRS** | **44.0** |
| **MODULE SIX** | | | | |
| 0715 541 08A | Apply engineering mechanics principles | Apply forces and moments in a mechanical system | 10 | 1.0 |
| Apply friction principles in mechanical systems | 10 | 1.0 |
| Apply kinematics of motion in mechanical systems | 10 | 1.0 |
| Apply mechanical work-energy theorem | 10 | 1.0 |
| Apply kinetics of motion in mechanical systems | 10 | 1.0 |
| Apply law of machines | 10 | 1.0 |
| Determine loading conditions in mechanical systems | 10 | 1.0 |
| Apply simple mechanisms | 10 | 1.0 |
| Design belts, ropes and chain drives | 20 | 2.0 |
| Design toothed gears and gear trains | 10 | 1.0 |
| Design mechanical rotor dynamic machines | 10 | 1.0 |
| Apply stress and strain concepts in mechanical systems | 10 | 1.0 |
| Apply simple bending theory in mechanical systems | 10 | 1.0 |
| Apply torsion theory in mechanical systems | 10 | 1.0 |
| **TOTAL** | **150** | **15.0** |
| 0715 551 19A | Electrical machines and mechanical drives installation | Analyse electrical machines | 30 | 3.0 |
| Install electrical machines | 40 | 4.0 |
| Maintain electrical machines. | 40 | 4.0 |
| Analyse mechanical drives | 40 | 4.0 |
| Assemble mechanical drives | 40 | 4.0 |
| Maintain mechanical drives | 30 | 3.0 |
| TOTAL | 220 | 22.0 |
| 0611 551 01A | Digital Literacy | Operate computer devices | 10 | 1 |
| Solve tasks using office suite | 10 | 1 |
| Manage data and information | 10 | 1 |
| Perform online communication and collaborations | 10 | 1 |
| Apply cybersecurity skills | 10 | 1 |
| Perform online jobs | 10 | 1 |
| Apply job entry techniques | 10 | 1 |
| TOTAL | 70 | 7.0 |
| **TOTAL** | |  | **440 HRS** | **44.0** |
| **MODULE SEVEN** | | | | |
| 0715 551 17A | Fabrication machinery operation | Apply workshop safety | 20 | 2.0 |
| Apply material science principles | 20 | 2.0 |
| Apply workshop tools and equipment | 20 | 2.0 |
| Carry out metal joining processes | 30 | 3.0 |
| Perform workshop organization technique | 30 | 3.0 |
| Create part designs | 60 | 6.0 |
| Perform machine configuration | 60 | 6.0 |
| Perform machining processes | 60 | 6.0 |
| **TOTAL** | **300** | **30.0** |
| 0417 541 03A | Apply Work Ethics and Practices | Apply self-management skills | 5 | 0.5 |
| Promote ethical practices and values | 10 | 1.0 |
| Promote teamwork | 10 | 1.0 |
| Maintain professional and personal development | 10 | 1.0 |
| Apply problem-solving skills | 10 | 1.0 |
| Promote customer care. | 5 | 0.5 |
| **TOTAL** | **50** | **5.0** |
| 0413 541 04A | Apply entrepreneurial skills | Apply financial literacy | 10 | 1.0 |
| Apply the entrepreneurial concept | 10 | 10 |
| Identify entrepreneurship opportunities | 10 | 10 |
| Apply business legal aspects | 10 | 10 |
| Innovate business strategies | 10 | 10 |
| Develop business plan | 10 | 10 |
| **TOTAL** | **60** | **6.0** |
| **TOTAL** | |  | **410** | **41.0** |
| **INDUSTRIAL ATTACHMENT** | |  | 480 | 48.0 |
| **GRAND TOTAL** | |  | **3520** | **352.0** |