Department for Education

Engineering and Manufacturing Route

Example industry placement objective templates for:

- **T Level in Design and Development for Engineering and Manufacturing**
- **T Level in Maintenance, Installation and Repair for Engineering and Manufacturing**
- **T Level in Engineering, Manufacturing, Processing and Control**

July 2020

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T Level: Design and Development for Engineering and Manufacturing

Occupational Specialism: Mechanical Engineering

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Assistant Design & Development Engineering Technician (Mechanical Engineering)	**Duration**	315 hours
Objective(s)		
To support the design and development mechanical engineering team in using, interpreting and evaluating a range of engineering data sources and documentation to enable the production of engineering drawings, models and plans for simple mechanical projects		
Typical Activities		
1. Working with the mechanical engineering team, analyse and interpret the requirements of a project on a regular basis (at least twice a week) by ○ Analysing and interpreting the mechanical design project's technical information from plans, drawings, and specifications ○ Confirming the mechanical design project expectations (outcomes) and requirements ○ Verifying the mechanical design technical data are compliant with context, function and specific requirements 2. Under supervision, model and evaluate mechanical design features, issues, performance and potential on a regular basis (at least once a week) by ○ Using technology to model mechanical design features, issues, performance and potential ○ Evaluating and comparing design/materials options ○ Producing drawings, models/simulations, using appropriate CAD software, or other digital technology for design options 3. Under supervision and working with the mechanical engineering team help to propose a design option and communicate solutions using drawings and/or digital methods on a regular basis (at least once a week) by ○ Working with others to agree and complete the assigned mechanical design, development, testing and quality assurance tasks and activities ○ Checking completed drawings for quality, technical compliance and completeness		

- Evaluating the project outcomes and assisting in communicating informed recommendations to stakeholders

4. Working individually or as a small team of students, analyse various functions of the organisation, the role of Assistant Design & Development Engineering Technician and how it fits into the organisation by
   - Working with a variety of roles to gain an appreciation of the diversity of roles
   - Communicating findings through a written report, in the format utilised within the organisation
   - Presenting the findings of the report, using presentation tools and formats found within the organisation

Learning goals	**TQ Reference**
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering **Technical skills** • Interpreting technical drawing symbols, annotations and diagrams in a range of formats • Ability to understand and confirm project expectations and requirements • Communicate with technical details, verifying mechanical designs in relation to context, function and any specific requirements On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice	*[Insert corresponding reference from the TQ content]*

• Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning - identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Using appropriate technology including engineering software to model and evaluate mechanical design features, issues, performance and potential • Understanding of the impacts of different materials on design by using appropriate information sources and judgement to select, evaluate, recommend, and confirm suitable engineering and manufacturing materials for specific uses • Using appropriate CAD software, tools, and technology for engineering representation through drawings and models On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Recording: transcribing, noting, capturing, saving, storing • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Understand and communicate a mechanical design • Complete risk management analyses • Check plans/drawings/models and provide feedback • Ability to review outcomes and assist in communicating information to stakeholders On the placement the student will need to further develop and hone through activity 4: **Employability skills** • Working in a team	

- Assessing risks
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone
- Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Presenting: conveying information to an audience to stimulate discussion, and/or secure consistent understanding
- Analysing: identifying and understanding the structure of the organisation

Technical skills

- Complete analysis of of legal and compliance issues in the workplace including health and safety; commercial contracts
- Basic understanding and application of timescales and project management
- Ability to evaluate and review functions of the organisation including engineering management, supply chains, finance and marketing
- Communicate effectively with the use of appropriate technical language

Minimum starting requirements

- Attendance at induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering in the Manufacturing, Design and Development sector
  - Understanding of the roles, functions and operations of Manufacturing, Design and Development and how they relate to the engineering sector
  - Basic knowledge of CAD and other digital engineering software
  - Understanding of how manufacturing must meet the needs of clients
- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Punctuality
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty
  - A thorough and organised approach
  - Team participation

T Level: Design and Development for Engineering and Manufacturing

Occupational Specialism: Electrical and Electronic Engineering

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Assistant Design & Development Engineering Technician (Electrical and Electronic Engineering)	**Duration**	315 hours
Objective(s)		
To support the electrical/electronic engineering team in using, interpreting and evaluating a range of engineering data sources and documentation to enable the production of circuit and systems diagrams for simple projects with electrical/electronic control		
Typical Activities		
1. Working with the electrical/electronic engineering team, analyse and interpret the requirements of an electronic control project on a regular basis (at least twice a week) by ○ Analysing and interpreting the electrical/electronic design project's technical information from systems diagrams and specifications ○ Confirming the electrical/electronic design project expectations (outcomes) and requirements ○ Verifying the electrical/electronic project design technical data are compliant with context, function and specific requirements 2. Under supervision, model and evaluate electrical/electronic design features, issues, performance and potential on a regular basis (at least once a week) by ○ Using technology to model electrical/electronic design features, issues, performance and potential ○ Evaluating and comparing design/materials options ○ Producing electrical and electronic engineering circuit/system diagrams, models and simulations, using appropriate CAD software, or other digital technology for design options 3. Under supervision, and working with the electrical/electronic engineering team help to propose a design option and communicate solutions using circuit drawings and/or digital methods on a regular basis (at least once a week) by ○ Working with others to agree and complete a drawing/model of the proposed electrical/electronic circuit design and undertaking testing		

- Checking the completed electrical and electronic engineering circuit/system diagrams for quality, technical compliance, functionality and completeness and providing feedback
- Evaluating the project outcomes and assisting in communicating informed recommendations to stakeholders

4. Working individually or as a small team of students, analyse various functions of the organisation, the role of Assistant Design & Development Engineering Technician and how it fits into the organisation by
- Working with a variety of roles to gain an appreciation of the diversity of roles
- Communicating findings through a written report, in the format utilised within the organisation
- Presenting the findings of the report, using presentation tools and formats found within the organisation

Learning goals	**TQ Reference**
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering **Technical skills** • Working as part of a team, interpreting technical drawing symbols, annotations and diagrams in a range of formats • Ability to understand and confirm project expectations and requirements • Under supervision: students communicate with technical details, verifying electrical/electronic designs in relation to context, function and any specific requirements On the placement the student will need to further develop and hone through activity 2:	*[Insert corresponding reference from the TQ content]*

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning - identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Under supervision: ability to use appropriate technology including engineering software to model and evaluate electrical/electronic design features, issues, performance and potential • Applied understanding of appropriate information sources to select, evaluate, recommend, and confirm suitable engineering electrical/electronic circuit designs • Using appropriate CAD software, tools, and technology for engineering representation through high-quality circuit diagrams and working models On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Recording: transcribing, noting, capturing, saving, storing • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Under supervision, students work with others to agree an electrical/electronic circuit design and complete a detailed risk management analysis • Ability to check circuits and working models and provide feedback under supervision • Ability to review outcomes and assist in communicating information to stakeholders	

On the placement the student will need to further develop and hone through activity 4: **Employability skills** • Working in a team • Assessing risks • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Presenting: conveying information to an audience to stimulate discussion, and/or secure consistent understanding • Analysing: identifying and understanding the structure of the organisation **Technical skills** • Complete analysis of of legal and compliance issues in the workplace including health and safety; commercial contracts • Basic understanding and application of timescales and project management • Ability to evaluate and review functions of the organisation including engineering management, supply chains, finance and marketing • Communicate effectively with the use of appropriate technical language	
Minimum starting requirements	
• Attendance at induction day • Basic Health and Safety Training • Issued with mandatory PPE	
Suggested prior learning	

• Knowledge
  ○ Key principles, techniques and methodologies relevant to engineering in the Manufacturing, Design and Development sector
  ○ Understanding of the roles, functions and operations of Manufacturing, Design and Development and how they relate to the engineering sector
  ○ Basic knowledge of CAD and other digital engineering software
  ○ Understanding of how manufacturing must meet the needs of clients
 	
• Typical workplace behaviours needed for role, including:
  ○ Professionalism
  ○ Punctuality	

- Ability to work independently and to take responsibility
- Initiative
- Willingness to learn
- Openness and honesty
- A thorough and organised approach
- Team participation

T Level: Design and Development for Engineering and Manufacturing

Occupational Specialism: Control and Instrumentation Engineering

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Assistant Design & Development Engineering Technician (Control and Instrumentation Engineering)	**Duration**	315 hours
Objective(s)		
To support the control and instrumentation engineering team in using, interpreting and evaluating a range of engineering data sources and documentation to enable the design of simple control projects (e.g. robotics or automation) or instrumentation applications (e.g. valves or pressure gauge/switches)		
Typical Activities		
1. Working with the control and instrumentation engineering team on a regular basis (at least twice a week), analyse and interpret the requirements of a control and instrumentation project by ○ Analysing and interpreting the control and instrumentation design project's technical information from systems diagrams and specifications ○ Confirming the control and instrumentation design project expectations (outcomes) and requirements ○ Verifying the control and instrumentation project design technical data are compliant with context, function and specific requirements 2. Under supervision, model and evaluate control and instrumentation design features, issues, performance and potential on a regular basis (at least once a week) by ○ Using technology to model control and instrumentation design features, issues, performance and potential ○ Evaluating and comparing design/materials options ○ Producing control and instrumentation engineering plans, circuit/system diagrams, models and simulations, using appropriate CAD software, or other digital technology for design options 3. Under supervision and working with the control and instrumentation engineering team help to propose a design option and communicate solutions using plans, circuit diagrams, drawings and/or digital methods on a regular basis (at least once a week) by		

- Working with others to agree and complete a plan/drawing/model/circuit diagram of the proposed control and instrumentation design and undertaking testing
- Checking the completed control and instrumentation plans, drawings, models and/or circuit diagrams for quality, technical compliance, functionality and completeness and providing feedback
- Evaluating the project outcomes and assisting in communicating informed recommendations to stakeholders

4. Working individually or as a small team of students, analyse various functions of the organisation, the role of Assistant Design & Development Engineering Technician and how it fits into the organisation by

- Working with a variety of roles to gain an appreciation of the diversity of roles
- Communicating findings through a written report, in the format utilised within the organisation
- Presenting the findings of the report, using presentation tools and formats found within the organisation

Learning goals	**TQ Reference**
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering **Technical skills** • Working as part of a team: interpreting technical drawing symbols, annotations and diagrams in a range of formats • Ability to understand and confirm project expectations and requirements • Under supervision: students communicate with technical details, verifying control and instrumentation designs in relation to context, function and any specific requirements On the placement the student will need to further develop and hone through activity 2:	*[Insert corresponding reference from the TQ content]*

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Planning - identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity
- Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests
- Evaluating: considering and appraising process and evidence, making recommendations

Technical skills

- Under supervision: ability to use appropriate technology including engineering software to model and evaluate control and instrumentation design features, issues, performance and potential
- Students use appropriate information sources and judgement to select, evaluate, recommend, and confirm suitable engineering control and instrumentation designs
- Using appropriate CAD software, tools, and technology for engineering representation through high-quality plans, diagrams and working models

On the placement the student will need to further develop and hone through activity 3:

Employability skills

- Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering
- Recording: transcribing, noting, capturing, saving, storing
- Evaluating: considering and appraising process and evidence, making recommendations

Technical skills

- Under supervision, students work with others to agree a control and instrumentation design and complete a detailed risk management analysis
- Under supervision students check plans, diagrams and working models and provide feedback
- Ability to review outcomes and assist in communicating information to stakeholders

On the placement the student will need to further develop and hone through activity 4: **Employability skills** • Working in a team • Assessing risks • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Presenting: conveying information to an audience to stimulate discussion, and/or secure consistent understanding • Analysing: identifying and understanding the structure of the organisation **Technical skills** • Complete analysis of of legal and compliance issues in the workplace including health and safety; commercial contracts • Basic understanding and application of timescales and project management • Ability to evaluate and review functions of the organisation including engineering management, supply chains, finance and marketing • Communicate effectively with the use of appropriate technical language	
Minimum starting requirements	
• Attendance at induction day • Basic Health and Safety Training • Issued with mandatory PPE	
Suggested prior learning	

• Knowledge
  ○ Key principles, techniques and methodologies relevant to engineering in the Manufacturing, Design and Development sector
  ○ Understanding of the roles, functions and operations of Manufacturing, Design and Development and how they relate to the engineering sector
  ○ Basic knowledge of CAD and other digital engineering software
  ○ Understanding of how manufacturing must meet the needs of clients
 	
• Typical workplace behaviours needed for role, including:
  ○ Professionalism
  ○ Punctuality	

- Ability to work independently and to take responsibility
- Initiative
- Willingness to learn
- Openness and honesty
- A thorough and organised approach
- Team participation

T Level: Design and Development for Engineering and Manufacturing

Occupational specialism: Structural Engineering

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Assistant Design & Development Engineering Technician (Structural Engineering)	**Duration**	315 hours
Objective(s)		
To support the structural engineering team when working with projects that require calculations for load bearing structural components for organisation/client projects to enable materials and resources to be identified that are within budget and can be delivered on schedule		
Typical Activities		
1. Working with the structural engineering team, analyse and interpret the requirements of a project (typically in the first week) by o Examining and interpreting the structural design project's technical information from plans, drawings, specifications and all stakeholders o Confirming the design project expectations (outcomes) and requirements o Verifying the structural design project meets the specific requirement of load calculations, materials and costs 2. Under supervision, select, evaluate, recommend, and confirm suitable engineering and manufacturing materials for load bearing structural components, explaining and justifying choices (typically in the first two weeks) by o Using appropriate technology to model structural design features, issues, performance and potential o Evaluating and comparing design/materials options o Producing drawings, models/simulations, using appropriate CAD software, or other digital technology for the preferred design option(s) 3. Under Supervision and working with the structural engineering team help to manage, develop, test and quality assure structural engineering systems which leads to a viable outcome (typically in week 4/5) by o Completing a detailed risk management analysis in response to the specific requirements of the project and activities o Developing and testing models, investigating and analysing results and accurately reporting findings o Evaluating the outcomes from modelling and assisting in communicating informed recommendations to stakeholders		

4. Working individually or as a small team of students, analyse various functions of the organisation, the role of Assistant Design & Development Engineering Technician and how it fits into the organisation by

- Working with a variety of roles to gain an appreciation of the diversity of roles
- Communicating findings through a written report, in the format utilised within the organisation
- Presenting the findings of the report, using presentation tools and formats found within the organisation

Learning goals	**TQ Reference**
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering **Technical skills** • Working as part of a team: interpreting technical drawing symbols, annotations and diagrams in a range of formats • Ability to understand and confirm project expectations, structural design concepts, briefs and specifications • Under supervision: students communicate with technical details, verifying structural designs in relation to context, function and any specific requirements On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding	*[Insert corresponding reference from the TQ content]*

• Planning - identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Under supervision: ability to use appropriate technology including engineering software to model and evaluate structural design features, issues, performance and potential • Applied understanding of the impacts of different materials on design by using appropriate information sources and judgement to select, evaluate, recommend, and confirm suitable engineering and manufacturing materials for specific uses • Using appropriate CAD software, tools, and technology for engineering representation through drawings and models On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Recording: transcribing, noting, capturing, saving, storing • Evaluating: considering and appraising process and evidence, making recommendations **Technical skills** • Under supervision, students complete a detailed risk management analysis • Under supervision students develop and test models and provide feedback • Ability to review outcomes and assist in communicating information to stakeholders On the placement the student will need to further develop and hone through activity 4: **Employability skills** • Working in a team • Assessing risks	

- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone
- Decision-making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Presenting: conveying information to an audience to stimulate discussion, and/or secure consistent understanding
- Analysing: identifying and understanding the structure of the organisation

Technical skills

- Complete analysis of of legal and compliance issues in the workplace including health and safety; commercial contracts
- Basic understanding and application of timescales and project management
- Ability to evaluate and review functions of the organisation including engineering management, supply chains, finance and marketing
- Communicate effectively with the use of appropriate technical language

Minimum starting requirements

- Attendance at induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
    - Key principles, techniques and methodologies relevant to engineering in the Manufacturing, Design and Development sector
    - Understanding of the roles, functions and operations of Manufacturing, Design and Development and how they relate to the engineering sector
    - Basic knowledge of CAD and other digital engineering software
    - Understanding of how manufacturing must meet the needs of clients

- Typical workplace behaviours needed for role, including:
    - Professionalism
    - Punctuality
    - Ability to work independently and to take responsibility
    - Initiative
    - Willingness to learn
    - Openness and honesty
    - A thorough and organised approach
    - Team participation

T Level: Maintenance, Installation and Repair for Engineering and Manufacturing

Occupational Specialism: Maintenance Engineering Technologies - Mechanical

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Junior Maintenance Technician (Mechanical)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To support the Maintenance team (mechanical) in attending to the needs of mechanical assets to ensure continuous organisation productivity</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Working in a team, review existing maintenance plans and evaluate a task on a regular basis (at least once a week) by
○ Supporting pre-job risk assessment
○ Selecting appropriate tools
○ Preparing the work area
○ Gathering appropriate spares/parts/resources

2. Under supervision, undertake a service, installation or repair in accordance with set procedures (at least once a week) by
○ Undertaking dynamic risk assessment
○ Following procedures
○ Complete diagnostic testing and fault finding
○ Identifying suitability of components
○ Replacing, repairing or installing as necessary

3. Under supervision, restore equipment to working order (at least once a week) by
○ Completing a post-job de-brief
○ Restoring isolation in system
○ Completing a return to service test
○ Updating records</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:</td><td>[Insert corresponding reference</td></tr>
</table>

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours **Technical skills** • Sourcing relevant data from online sources, instruction manuals, technical bulletins • Agreeing activity/task/problem, preparing and confirming a brief which follows standard operating procedures • Preparing work areas and set up tools On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying training, operator competencies, resources and procedures required • Outlining potential risks and identifying health and safety requirements • Learning about the production of a commissioning/service plan On the placement the student will need to further develop and hone through activity 3:	*from the TQ content]*

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Observing: situational awareness, monitoring
- Recording: transcribing, noting, capturing, saving, storing
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone

Technical skills

- Under supervision, assisting with the commission of machinery and following set procedures from manufacturers data
- Reviewing the activity using notes and or observations made during the activity
- Adding the new commission to the maintenance schedule

Minimum starting requirements

- Attendance at Workplace Induction Program (WiP) induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  - Understanding of the roles, functions and operations of MIR and how they relate to the engineering sector
  - Understanding of how maintenance budgets are allocated/controlled
  - Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty
  - A thorough and organised approach
  - Team participation

T Level: Maintenance, installation and repair for engineering and manufacturing

Occupational Specialism: Maintenance engineering technologies - Mechatronic

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Junior Maintenance Technician (Mechatronic)	**Duration**	315 hours
Objective(s)		
To support the Maintenance team (Mechatronic) in attending to the needs of automated assets to ensure continuous organisation productivity		
Typical Activities		
1. Working in a team, review existing maintenance plans and evaluate a task on a regular basis (at least once a week) by ○ Supporting pre job risk assessment ○ Selecting appropriate tools ○ Preparing the work area ○ Gathering appropriate spares/parts/resources 2. Under supervision, undertake a service, installation or repair in accordance with set procedures (at least once a week) by ○ Undertake a dynamic risk assessment ○ Following procedures ○ Complete diagnostic testing and fault finding ○ Assessing the suitability of components ○ Replacing, repairing or installing as necessary 3. Under supervision, restore plant/machinery/equipment to working order (at least once a week) by ○ Completing a post job de-brief ○ Restoring isolation in the system ○ Completing a return to service test ○ Updating records		
Learning goals		**TQ Reference**
On the placement the student will need to further develop and hone through activity 1:		*[Insert corresponding reference*

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours **Technical skills** • Sourcing relevant data from online sources, instruction manuals, and technical bulletins • Agreeing activity/task/problem and confirming a brief which follows standard operating procedures • Preparing work area and setting up tools On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying training, operator competencies, resources and procedures required • Outlining potential risks and identify health and safety requirements • Learning about the production of a commissioning/service plan	*from the TQ content]*

On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Observing: situational awareness, monitoring • Recording: transcribing, noting, capturing, saving, storing • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone **Technical skills** • Under supervision, assisting with the commission of equipment and following set procedures from manufacturers data • Reviewing the activity using notes and or observations made during the activity • Adding the new commission to the existing maintenance schedule	

Minimum starting requirements

- Attendance at Workplace Induction Program (WiP) induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  - Understanding of the roles, functions and operations of maintenance installation and repair and how they relate to the engineering sector
  - Understanding of how maintenance budgets are allocated/controlled
  - Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty

- A thorough and organised approach
- Team participation

T Level: Maintenance, Installation and Repair for Engineering and Manufacturing

Occupational Specialism: Maintenance engineering technologies - Electrical and Electronic

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Junior Maintenance Technician (Electrical and Electronic)	**Duration**	315 hours
Objective(s)		
To support the Maintenance team (Electrical and Electronic) attending to the needs of electronic and electrical assets to ensure continuous organisation productivity		
Typical Activities		
1. Working in a team, review existing maintenance plans and evaluate a task on a regular basis (at least once a week) by ○ Supporting pre-job risk assessment ○ Selecting appropriate tools/equipment ○ Preparing work area ○ Gathering appropriate spares/parts/resources 2. Under supervision, undertake a service, installation or repair of an electronic/electrical component or system in accordance with set procedures (at least once a week) by ○ Undertaking dynamic risk assessment ○ Following procedures ○ Complete diagnostic testing and fault finding ○ Assessing the suitability of components ○ Replacing, repairing or installing as necessary 3. Under supervision, restore equipment to working order (at least once a week) by ○ Completing a post job de-brief ○ Restoring isolation in the system ○ completing a return to service test ○ Updating records		

Learning goals	**TQ Reference**
On the placement the student will need to further develop and hone through activity 1:	*[Insert corresponding*

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours **Technical skills** • Sourcing relevant data from online sources, instruction manuals, technical bulletins • Agreeing activity/task/problem, preparing and confirming a brief which follows standard operating procedures • Preparing work areas and set up tools/equipment On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying training, operator competencies, resources and setting procedures required • Outlining potential risks and identifying health and safety requirements • Learning about the production of a commissioning/service plan	*reference from the TQ content]*

On the placement the student will need to further develop and hone through activity 3:

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Observing: situational awareness, monitoring
- Recording: transcribing, noting, capturing, saving, storing
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone

Technical skills

- Under supervision, assisting with the commission of plant/machinery/equipment and follow set procedures from manufacturers data
- Reviewing the activity accurately using notes and or observations made during the activity
- Adding the new commission to the maintenance schedule

Minimum starting requirements

- Attendance at Workplace Induction Program (WiP) induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  - Understanding of the roles, functions and operations of MIR and how they relate to the engineering sector
  - Understanding of how maintenance budgets are allocated/controlled
  - Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty
  - A thorough and organised approach
  - Team participation

T Level: Maintenance, Installation and Repair for Engineering and Manufacturing

Occupational Specialism: Maintenance Engineering Technologies - Control and Instrumentation

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Junior Maintenance Technician (Control and Instrumentation)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To support the Maintenance team (Control and Instrumentation) in attending the needs of business assets to ensure continuous organisational productivity</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Working in a team, review existing maintenance plans and evaluate a task on a regular basis(at least once a week) by
○ Supporting pre-job risk assessment
○ Selecting appropriate tools/equipment
○ Preparing the work area
○ Gathering appropriate spares/parts/resources

2 Under supervision, undertake a service, installation or repair in accordance with set procedures (at least once a week) by
○ Undertaking dynamic risk assessment
○ Following procedures
○ Complete diagnostic testing and fault finding
○ Assessing the suitability of components
○ Replacing, repairing or installing as necessary

3. Under supervision, restore plant/machinery/equipment to working order (at least once a week) by
○ Completing a post job de-brief
○ Restoring isolation in the system
○ Completing a return to service test
○ Updating records</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:</td><td>[Insert corresponding reference</td></tr>
</table>

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours **Technical skills** • Sourcing relevant data from online sources, instruction manuals, technical bulletins • Agreeing activity/task/problem, preparing and confirming a brief which follows standard operating procedures • Preparing work areas and setting up tools/equipment On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning - identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying training, operator competencies, resources and procedures required • Outlining potential risks and identifying health and safety requirements • Learning about the production of a commissioning/service plan On the placement the student will need to further develop and hone through activity 3:	*from the TQ content]*

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Observing: situational awareness, monitoring
- Recording: transcribing, noting, capturing, saving, storing
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone

Technical skills

- Under supervision, assisting with the commission of machinery and equipment and following set procedures from manufacturers data
- Reviewing the activity using notes and or observations made during the activity
- Adding the new commission to the maintenance schedule

Minimum starting requirements

- Attendance at Workplace Induction Program (WiP) induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  - Understanding of the roles, functions and operations of MIR and how they relate to the engineering sector
  - Understanding of how maintenance budgets are allocated/controlled
  - Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty
  - A thorough and organised approach
  - Team participation

T Level: Maintenance, Installation and Repair for Engineering and Manufacturing

Occupational Specialism: Maintenance, Installation and Repair - Vehicles

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Junior Maintenance Technician (Vehicles)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To support the Maintenance team (Vehicles) attending to the needs of vehicles to ensure continuous organisation productivity</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Working in a team, review existing maintenance plans and evaluate a task on a regular basis (at least once a week) by
○ Supporting pre job risk assessment
○ Selecting appropriate tools
○ Preparing the work area
○ Gathering appropriate spares/parts/resources

2. Under supervision, undertake a service, installation or repair in accordance with set procedures (at least once a week) by
○ Undertaking dynamic risk assessment
○ Following procedures
○ Complete diagnostic testing and fault finding
○ Assessing the suitability of components
○ Replacing, repairing or installing as necessary

3. Under supervision, restore vehicle to working order (at least once a week) by
○ Completing a post job de-brief
○ Restoring isolation in system
○ Completing a return to service test
○ Updating records</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:</td><td>[Insert corresponding reference from the TQ content]</td></tr>
</table>

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity
- Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal
- Integrating with a team: settling in, communicating
- Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours

Technical skills

- Sourcing relevant data from online sources, instruction manuals, technical bulletins
- Agreeing activity/task/problem, preparing and confirming a brief which follows standard operating procedures
- Preparing work areas and assembling appropriate tools/materials

On the placement the student will need to further develop and hone through activity 2:

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity

Technical skills

- Identifying training, operator competencies, resources and procedures required
- Outlining potential risks and identifying health and safety requirements
- Learning about the production of a commissioning/service plan

On the placement the student will need to further develop and hone through activity 3:

Employability skills

- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Physical dexterity: precise and controlled movement, agility, co-ordination, delicacy, appropriate application of force
- Observing: situational awareness, monitoring
- Recording: transcribing, noting, capturing, saving, storing
- Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone

Technical skills

- Under supervision, assisting with the maintenance/installation/repair of vehicles and following set procedures from manufacturers data
- Reviewing the task/activity using notes and/or observations made during the task/activity
- Adding the task/activity to the maintenance schedule

Minimum starting requirements

- Attendance at Workplace Induction Program (WiP) induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  - Understanding of the roles, functions and operations of maintenance installation and repair and how they relate to the engineering sector
  - Understanding of how maintenance budgets are allocated/controlled
  - Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Ability to work independently and to take responsibility
  - Initiative

- Willingness to learn
- Openness and honesty
- A thorough and organised approach
- Team participation

T Level: Maintenance, Installation and Repair for Engineering and Manufacturing

Occupational Specialism: Maintenance, Installation and Repair - Energy and Utilities

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Junior Maintenance Technician (Energy and Utilities)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To support the Maintenance team (Energy and Utilities) in attending to the needs of the maintenance, installation or repair of energy or utilities systems to ensure continuous organisation productivity</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Working in a team, review existing maintenance, installation or repair plans and evaluate a task on a regular basis (at least once a week) by
○ Supporting pre job risk assessment
○ Selecting appropriate tools
○ Preparing the work area
○ Gathering appropriate spares/parts/resources

2. Under supervision, undertake maintenance, installation or repair, in accordance with set procedures (at least once a week) by
○ Undertaking dynamic risk assessment
○ Following procedures
○ Complete diagnostic testing and fault finding
○ Assessing the suitability of components
○ Replacing, repairing or installing as necessary

3. Under supervision, restore energy/utility system to working order (at least once a week) by
○ Completing post job debrief
○ Restoring isolation in system
○ Completing a return to service test
○ Updating records</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:</td><td>[Insert corresponding reference</td></tr>
</table>

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling appropriate behaviours **Technical skills** • Sourcing relevant data from online sources, instruction manuals, technical bulletins • Agreeing activity/task/problem, preparing and confirming a brief which follows standard operating procedures • Preparing work areas and setting up tools/equipment On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying training, operator competencies, resources and procedures required • Outlining potential risks and identifying health and safety requirements • Learning about the production of a commissioning/service plan	*from the TQ content]*

On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Physical dexterity: precise and controlled movement, agility, co-ordination, delicacy, appropriate application of force • Recording: transcribing, noting, capturing, saving, storing • Observing: situational awareness, monitoring **Technical skills** • Under supervision, assisting with the commission of energy/utilities and following standard operating procedures • Reviewing the activity using notes and/or observations made during the activity • Adding the commission to the maintenance schedule	
Minimum starting requirements	
• Attendance at Workplace Induction Program (WiP) induction day • Basic Health and Safety Training • Issued with mandatory PPE	
Suggested prior learning	

• Knowledge
  ○ Key principles, techniques and methodologies relevant to engineering maintenance, installation and repair
  ○ Understanding of the roles, functions and operations of maintenance installation and repair and how they relate to the engineering sector
  ○ Understanding of how maintenance budgets are allocated/controlled
  ○ Understanding of preventative and reactive maintenance and the requirements for both to deliver optimum asset availability for business needs
 	
• Typical workplace behaviours needed for role, including:
  ○ Professionalism
  ○ Ability to work independently and to take responsibility
  ○ Initiative
  ○ Willingness to learn	

- Openness and honesty
- A thorough and organised approach
- Team participation

T Level: Engineering, Manufacturing, Processing and Control
Occupational Specialism: Manufacturing Technologies

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Manufacturing trainee (Manufacturing Technologies)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To provide support for a team manufacturing an item, to enable completion and delivery to a client/customer within a specified time frame</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Working in a team and under supervision, gather information/data related to the nature and scope of the project on a regular basis by
○ Interpreting plans/drawings and identifying technical information, materials, methods and assessing the scale of the project
○ Setting out specific requirements in terms of resources, raw materials, costs, outcomes and timescales
○ Identifying any issues and risks with resources, tools, equipment and machinery

2. Under supervision, prepare for the manufacturing project on a regular basis by
○ Checking the location of, availability and costs of tools/resources required and whether they meet the needs of client/customer
○ Identifying Health and safety considerations including PPE
○ Providing a plan of action before work starts for setting up the work area,
○ Adjusting machines, measuring and marking out and dealing with wastage

3. Under supervision, undertake fabrication on a regular basis by
○ Measuring, cutting and preparing materials within tolerance using appropriate tools and equipment
○ Completing fabrication using the prepared schedule/plan of action using safe working procedures/practices
○ Undertaking fault finding and quality control procedures
○ Evaluating and reviewing project outcome</td></tr>
</table>

Learning goals	TQ Reference
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Observing: situational awareness, monitoring • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling correct and appropriate behaviours **Technical skills** • Working in a team, students confirm/discuss the nature and scope of requirements from digital or paper plans and drawings • Working in a team, students set out and cost resources, raw materials, outcomes and timescales for checking by a supervisor • Identifying potential risks, issues and areas that require further investigation such as problems with materials supply or machine faults On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding	*[Insert corresponding reference from the TQ content]*

- Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity

Technical skills

- Identifying components, tools, equipment, resources and preparatory checks/procedures required
- Outlining potential risks and identifying health and safety requirements
- Under supervision, producing a plan to prepare materials and fabricating the project for the designated work area
- Planning for wastage, disposal and potential recycling within the project

On the placement the student will need to further develop and hone through activity 3:

Employability skills

- Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity
- Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice
- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Physical dexterity: precise and controlled movement, agility, co-ordination, delicacy, appropriate application of force
- Recording: transcribing, noting, capturing, saving, storing

Technical skills

- Under supervision and working in a team, undertaking basic cutting and joining of materials following standard operating procedures
- Checking and quality assuring completed project using measurements and or observation
- Under supervision, evaluating the manufacturing processes, practices and outcomes for review

Minimum starting requirements

- Attendance at induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

• Knowledge
  ○ Key principles, techniques and methodologies relevant to engineering in the manufacturing, processing and control sector
  ○ Understanding of the roles, functions and operations of Manufacturing, Processing and Control and how they relate to the engineering sector
  ○ Basic knowledge of manufacturing processes
  ○ Understanding of how manufacturing must meet the needs of clients
 	
• Typical workplace behaviours needed for role, including:
  ○ Professionalism
  ○ Punctuality
  ○ Ability to work independently and to take responsibility
  ○ Initiative
  ○ Willingness to learn
  ○ Openness and honesty
  ○ A thorough and organised approach
  ○ Team participation

T Level: Engineering, Manufacturing, Processing and Control

Occupational Specialism: Production Technologies

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Production Trainee (Production Technologies)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To assist the Production team in collecting data for all/part of a production operation to identify improvements that could be made to product quality and process productivity</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Under supervision, gather and analyse information/data related to the production operation/process/method, on a regular basis by
○ Assessing risk
○ Agreeing a brief
○ Working as part of a team, reviewing the current production process and any standard operating procedures
○ Analysing the production process to identify quality issues or potential problems with machinery/equipment/materials
○ Reviewing the brief

2. Under supervision, undertake the brief, on a regular basis by
○ Checking the location and availability of resources required
○ Identifying Health and Safety considerations including PPE
○ Providing a plan of action, assembling resources required
○ Collecting and collating data

3. Assist the Production team, present and review data/findings and make observations with respect to quality and productivity, on a regular basis by
○ Completing a debrief which outlines findings/observations
○ Restoring resources and work areas
○ Working as part of a team, evaluating and reviewing findings/observations and presenting any improvements</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:</td><td>[Insert corresponding reference</td></tr>
</table>

Employability skills • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling correct, and appropriate behaviours **Technical skills** • Collecting/analysing existing data from the production process/method • Agreeing a brief setting out timescales, resources and data collection methods • Identifying potential risks On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity **Technical skills** • Identifying components, tools, equipment, resources and preparatory checks/procedures required • Identifying health and safety requirements	*from the TQ content]*

- Under supervision, collecting agreed data on the production process/method

On the placement the student will need to further develop and hone through activity 3:

Employability skills

- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Physical dexterity: precise and controlled movement, agility, co-ordination, delicacy, appropriate application of force
- Recording: transcribing, noting, capturing, saving, storing
- Evaluating: considering and appraising process and evidence, making recommendations
- Observing: situational awareness, monitoring

Technical skills

- Under supervision, presenting a debrief
- Restoring resources and work areas
- Evaluating and reviewing process and outcome and identifying any potential opportunities for improvement or cost saving

Minimum starting requirements

- Attendance at induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering in the manufacturing, processing and control sector
  - Understanding of the roles, functions and operations of Manufacturing, Processing and Control and how they relate to the engineering sector
  - Basic knowledge of assembly line production
  - Understanding of how manufacturing must meet the needs of clients

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Punctuality
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty

- A thorough and organised approach
- Team participation

T Level: Engineering, Manufacturing, Processing and Control

Occupational Specialism: Processing Technologies

Role Profile [INDICATIVE EXAMPLE]

Role Title	**Working Pattern**	To be agreed between the provider and employer
Processing Trainee (Processing Technologies)	**Duration**	315 hours
Objective(s)		
To undertake a review of a processing operation and provide a technical document or presentation to highlight areas where improvements can be made to speed up and/or streamline the operation and reduce costs and/or waste To support the Processing team in evaluating processing operations to identify areas where refinements and improvements can be made to streamline operations and/or reduce costs and/or waste		
Typical Activities		
1. Under supervision, identify a processing operation (or part) and gather and analyse information/data on a regular basis by ○ assessing risk ○ agreeing a brief ○ identifying technical data ○ analysing the processing operation to identify issues or potential problems with machinery/equipment ○ reviewing the brief 2. Under supervision, undertake the brief on a regular basis by ○ Checking the location and availability of resources required ○ Identifying Health and Safety considerations including PPE ○ Providing a structured plan of action for the brief ○ Collecting and collating data 3. Assist the processing team, to present and review data/findings and make observations with respect to streamlining operations and/or reducing costs/waste on a regular basis by ○ Completing a debrief ○ Restoring resources and work areas ○ Assisting in evaluating/reviewing the findings/observations and any improvements		

Learning goals	TQ Reference
On the placement the student will need to further develop and hone through activity 1: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling correct, and appropriate behaviours **Technical skills** • Collecting/analysing existing data from the processing method/operation • Agreeing a brief setting out timescales, resources and data collection methods • Identifying potential risks On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Observing: situational awareness, monitoring	*[Insert corresponding reference from the TQ content]*

• Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests **Technical skills** • Identifying tools, resources and equipment and preparatory checks/procedures required • Identifying health and safety requirements • Under supervision, collecting agreed data on the processing operation/method On the placement the student will need to further develop and hone through activity 3: **Employability skills** • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Recording: transcribing, noting, capturing, saving, storing • Evaluating: considering and appraising process and evidence, making recommendations • Observing: situational awareness, monitoring **Technical skills** • Under supervision, presenting a debrief • Restoring tools, equipment and resources and work areas • Evaluating and reviewing the outcome and identifying any potential opportunities for improvement or cost saving	
Minimum starting requirements	
• Attendance at induction day • Basic Health and Safety Training • Issued with mandatory PPE	
Suggested prior learning	

• Knowledge
  ○ Key principles, techniques and methodologies relevant to engineering in the manufacturing, processing and control sector
  ○ Understanding of the roles, functions and operations of Manufacturing, Processing and Control and how they relate to the engineering sector
  ○ Basic knowledge of processing
  ○ Understanding of how manufacturing must meet the needs of clients
 	
• Typical workplace behaviours needed for role, including:	

- Professionalism
- Punctuality
- Ability to work independently and to take responsibility
- Initiative
- Willingness to learn
- Openness and honesty
- A thorough and organised approach
- Team participation

T Level: Engineering, Manufacturing, Processing and Control

Occupational Specialism: Materials Technologies

Role Profile [INDICATIVE EXAMPLE]

<table>
<tr><td>Role Title</td><td>Working Pattern</td><td>To be agreed between the provider and employer</td></tr>
<tr><td>Materials Trainee (Materials Technologies)</td><td>Duration</td><td>315 hours</td></tr>
<tr><td colspan="3">Objective(s)</td></tr>
<tr><td colspan="3">To assist the Materials team in duties related to the assessment of the suitability of new/alternative materials for manufactured products/items including the determination of least cost and minimum waste solutions</td></tr>
<tr><td colspan="3">Typical Activities</td></tr>
<tr><td colspan="3">1. Under supervision gather and analyse materials information/data, on a regular basis by
○ Assessing risk
○ Agreeing a brief
○ Collecting data from online sources, data sheets and technical bulletins
○ Agreeing and confirming any processes, resources, materials, costs, Outcomes and timescales
○ Reviewing the brief

2. Working under supervision, undertake the brief, on a regular basis by
○ Checking the location and availability of any resources required
○ Identifying Health and Safety considerations including PPE
○ Providing a plan of action
○ Carrying out the brief under supervision

3. Assist the materials team to present and review by
○ Completing a de-brief which outlines finding/observations
○ Restoring equipment, resources and work areas
○ Assisting the team in evaluating and reviewing the brief and highlighting any cost reductions and/or alternative materials</td></tr>
<tr><td colspan="2">Learning goals</td><td>TQ Reference</td></tr>
<tr><td colspan="2">On the placement the student will need to further develop and hone through activity 1:

Employability skills
• Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice</td><td>[Insert corresponding reference from the TQ content]</td></tr>
</table>

• Communicating: active listening, use of visual, oral and written methods, engaging an audience, sharing, building rapport, adapting style and tone • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering • Investigating: identifying sources, developing search criteria/queries, interrogating data, designing and carrying out tests • Working in a team: working with others with different skills, expertise and experience to accomplish a task or goal • Integrating with a team: settling in, communicating • Developing leadership: setting direction, taking responsibility, modelling correct, and appropriate behaviours **Technical skills** • Working as part of the team, collecting and analysing the technical information on materials • Agreeing a brief setting out necessary resources, raw materials, costs, outcomes and timescales • Identifying potential risks On the placement the student will need to further develop and hone through activity 2: **Employability skills** • Self-managing: monitoring, reflecting and inviting feedback on own performance, managing time, setting personal goals, referring to others for advice • Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding • Planning: identifying discrete steps, estimating time and resources, prioritising, coordinating, sequencing activity • Observing: situational awareness, monitoring **Technical skills** • Identifying health and safety requirements • Under supervision, preparing materials, resources tools and equipment • Under supervision, collecting agreed data on materials On the placement the student will need to further develop and hone through activity 3:	

Employability skills

- Decision making: clarifying logical choices, identifying likely impact, using evidence and advice, justifying, substantiating, concluding
- Analysing: identifying common features, organising into types, discerning patterns, deconstructing, classifying, ordering
- Recording: transcribing, noting, capturing, saving, storing
- Evaluating: considering and appraising process and evidence, making recommendations
- Observing: situational awareness, monitoring

Technical skills

- Under supervision, assisting in presenting a debrief
- Evaluating and reviewing, highlighting any areas where potential cost savings/improvements could be made
- Restoring resources, equipment and work areas

Minimum starting requirements

- Attendance at induction day
- Basic Health and Safety Training
- Issued with mandatory PPE

Suggested prior learning

- Knowledge
  - Key principles, techniques and methodologies relevant to engineering in the manufacturing, processing and control sector
  - Understanding of the roles, functions and operations of Manufacturing, Processing and Control and how they relate to the engineering sector
  - Basic knowledge Casting and the Properties of Materials
  - Understanding of how manufacturing must meet the needs of clients

- Typical workplace behaviours needed for role, including:
  - Professionalism
  - Punctuality
  - Ability to work independently and to take responsibility
  - Initiative
  - Willingness to learn
  - Openness and honesty
  - A thorough and organised approach
  - Team participation