

# 6 Month Intensive Manufacturing and Machining Course



## Course Overview

### Who is the course for?

This course is designed for those who have an interest in joining the construction, mechanical engineering and manufacturing industries. You will study the basic principles of manufacturing and machining and acquire practical skills using different types of hand and machine tools. This course lays a solid foundation with a focus on the **practical skills** needed to perform manufacturing processes.

To complement your practical skill generation you will complete a recognised academic qualification carrying **International Certification** from the **UK**. A **Level 2 - Diploma in Engineering – Manufacturing Technology** would be awarded should the delegate achieve the required standard.

When assessed to be competent you will be able to operate machinery associated within the manufacturing and production of components used in mechanical equipment. These are technical qualifications that meet the required standard to become a machining technician in mechanical engineering industry.

Designed for individuals with none, or limited, experience this course will provide a recognized international qualification and the skills to progress within industry.

### What will I study on the course?

WAZP will utilize highly skilled instructors from the UK to deliver this training. The UK has a long and proud tradition of manufacturing within the engineering industry and this offers an exciting opportunity for young people. As a machining technician you will be taught the practical and theoretical skills associated within manufacturing and production.

This is an exciting pathway for anyone wishing to study a practical course that will lead into the world of work as a machining technician. Engineering is a skills shortage area and is a rewarding and varied career for anyone who wishes to choose it.

You will study subjects and develop competencies including:

- machine shop safety,
- basic hand tools,
- marking out
- measuring,
- hand skills,
- working to tolerances and specifications,
- inspection,

### Further Information

If you would like to receive further information about these courses or any of WAZP Groups services please email to [courses@wazp-gr.com](mailto:courses@wazp-gr.com) or contact any of our regional offices



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You will also develop machining skills to include;

drilling,

centre lathe turning,

vertical and horizontal milling,

grinding,

### What makes this course special?

You will be taught in our dedicated manufacturing workshop, using high quality, industry standard machine shop equipment and facilities. The course is designed to be highly practical with integrated practical tasks and HSSE courses.

### How will I be assessed?

Assessment of the course is a combination of online multi choice questions, short written questions and practical assessment. You do not need any specific qualifications to start this course, however any experience in the field of engineering or fabrication would be a benefit.

### How long is the course?

This course is taken over a 6 month period



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## Manufacturing & Machining

### How will I study and what units of study are in the course ?

The course will be a combination of taught classes, practical instruction and project work. There are 11 Units to complete during the course;

#### UNIT 1 - Working in engineering

#### UNIT 2 - Principles of engineering technology

#### UNIT 3 - Principles of manufacturing technology

#### UNIT 4 - Using bench fitting techniques

#### UNIT 5 – Bench fitting Projects

#### UNIT 6 - Machine components using turning techniques

#### UNIT 7 – Turning Projects

#### UNIT 8 - Machine components using milling techniques

#### UNIT 9 – Milling Projects

#### UNIT 10 – Surface grinding

#### UNIT 11 – Combined Project



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## Unit 1 - Working in engineering

**Level: 2**

### Unit aim

This unit will encourage candidates to find out about working in engineering. It will cover the underpinning basic skills and knowledge needed to function in engineering or manufacturing sectors.

It will cover the need to recognise and use safe working practices, consideration of the environment and working effectively as a part of a team. It includes the methods of communication that engineers use in their everyday.

### Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know engineering health and safety requirements
2. Know effective methods of communication
3. Understand drawings and specifications
4. Know about working in engineering

### Assessment

This unit will be assessed by an online multiple-choice assessment.

## Unit 2 - Principles of engineering technology

**Level: 2**

### Unit aim

This unit is concerned with the basic principles of mathematics and science, along with the materials technology that underpin engineering applications. It covers common applied engineering calculations and materials selection in terms of types, common forms of supply, properties and methods of changing their properties.

### Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know requirements for materials in engineering
2. Know properties of engineering materials
3. Know how to apply analytical methods to engineering mathematical applications
4. Know how to apply analytical methods to engineering science applications

### Assessment

This unit will be assessed by an online multiple-choice assessment.

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## Unit - 3 Principles of manufacturing technology

**Level: 2**

### Unit aim

This unit is concerned with the methods of manufacture. It includes the range of functions found in manufacturing organisations and will provide the candidate with the knowledge to plan the manufacturing production of routine engineering components by the most economic manufacturing method(s).

### Learning outcomes

There are **three** outcomes to this unit. The learner will:

1. Know the functions within a manufacturing organisation
2. Know how to select suitable materials and components to manufacture products
3. Know how to plan production from a given specification

### Assessment

This unit will be assessed by a short answer question paper.



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## Unit 4 - Using bench fitting techniques

**Level: 2**

### Unit aim

This unit covers a broad range of fitting activities that are required in the engineering and manufacturing sectors. It covers skills and knowledge needed to produce components for assembly using appropriate tools, different materials and inspection techniques to achieve the required tolerances and conforming to specifications, whilst complying with health and safety legislation and regulations.

### Learning outcomes

There are **two** outcomes to this unit. The learner will:

1. Know how to plan and prepare for bench fitting activities
2. Be able to apply bench fitting techniques to produce component parts

### Assessment

This unit will be assessed by an assignment covering practical skills and underpinning knowledge.

## Unit 5 - Bench fitting projects

### Unit aim

This unit provides an opportunity for candidates to apply the knowledge and skills they are learned during Unit 4 on a series of projects. The short projects will progressively introduce new skills allowing for the building of practical application experience in a workshop environment.

### Assessment

Project work will be assessed against the provided technical specification considering dimensional accuracy, geometry, functionality, surface finish, functionality and compliance with HSSE regulations during the project period.



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## Unit 6 - Machine components using turning techniques

**Level: 2**

### Unit aim

This unit covers a broad range of turning activities that are required in the engineering and manufacturing sectors. It covers skills and knowledge needed to produce turned components in different materials, using appropriate tools and equipment, and inspection techniques to achieve the required tolerances and conforming to specifications, whilst complying with health and safety legislation and regulations.

This unit is concerned with the underlying process in producing components that require shafts of various lengths and shapes (including boring and reaming).

### Learning outcomes

There are **three** learning outcomes to this unit. The learner will:

1. Know how to plan and prepare for turning activities
2. Be able to turn parallel and tapered shafts
3. Be able to offset turn, external and internal diameters

### Assessment

This unit will be assessed by an assignment covering practical skills and underpinning knowledge.

## Unit 7 – Turning projects

### Unit aim

This unit provides an opportunity for candidates to apply the knowledge and skills they are learned during Unit 6 on a series of projects. The short projects will progressively introduce new skills allowing for the building of practical application experience in a workshop environment.

### Assessment

Project work will be assessed against the provided technical specification considering dimensional accuracy, geometry, functionality, surface finish, functionality and compliance with HSSE regulations during the project period.



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## Unit 8 - Machine components using milling techniques

**Level: 2**

### Unit aim

This unit is concerned with the underlying process in setting special holding devices prior to carrying out milling operations. The candidate will be able set and operate milling machines. They will be able to select the appropriate automatic feed and cutters to achieve the desired outcome.

The candidate will be able to select and set cutters for straddle milling.

### Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know how to plan and prepare for milling activities
2. Be able to determine requirements for milling operations
3. Be able to perform milling operations to produce parts
4. Be able to perform milling operations

### Assessment

This unit will be assessed by an assignment covering practical skills and underpinning knowledge.

## Unit 9 – Milling projects

### Unit aim

This unit provides an opportunity for candidates to apply the knowledge and skills they are learned during Unit 8 on a series of projects. The short projects will progressively introduce new skills allowing for the building of practical application experience in a workshop environment.

### Assessment

Project work will be assessed against the provided technical specification considering dimensional accuracy, geometry, functionality, surface finish, functionality and compliance with HSSE regulations during the project period.



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## Unit 10 – Surface Grinding

### Unit aim

This unit is concerned with the underlying process of Surface Grinding. The candidate will be able set and operate surface grinding machines. They will be able to mount and dress a grinding wheel and select the appropriate automatic feed settings to achieve the desired outcome.

### Learning outcomes

There are **four** learning outcomes to this unit. The learner will:

1. Know how to plan and prepare for surface grinding activities
2. Be able to determine requirements for surface grinding operations
3. Be able to perform surface grinding operations to produce parts
4. Be able to perform surface grinding operations

### Assessment

This unit will be assessed by an assignment covering practical skills and underpinning knowledge.

## Unit 11 – Combined project

### Unit aim

This unit provides an opportunity for candidates to apply the knowledge and skills they are learned during all Units on an integrated project. The project will allow for the assessment of team work, communication and scheduling as small groups work to complete the defined project.

### Assessment

The group project will be assessed using a combination of HSSE, technical and soft skills.



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