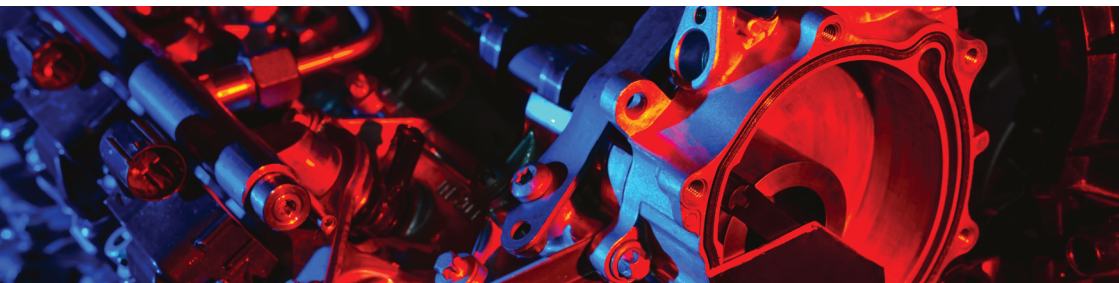


LABOUR MARKET INFORMATION

# ADVANCED MANUFACTURING, ENGINEERING & MOTORSPORT



# DO YOU LIKE...

1



## Building things

...constructing LEGO sets, models, or DIY projects?

2



## Using technology

... working with robots, programming, or using design software?

## 3 Figuring out how things work

...taking apart gadgets or fixing bikes and scooters?



4



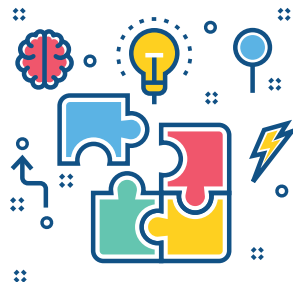
## Hands on projects

...using tools, working on engines, or crafting things in tech or woodwork class?

5

## Solving puzzles or problems

... finding ways to improve how something is made or fixing something that's broken?



6

## Working in a team

...working with others to build or design things for group projects?



# WHAT IS THE ADVANCED MANUFACTURING, ENGINEERING & MOTORSPORT SECTOR?

Advanced manufacturing, engineering and motorsport is about designing, making, testing, repairing and improving products, machines, systems and materials. It includes everything from precision parts and food production to high-performance motorsport technology, electronics, robotics,

The South Midlands has strong links to advanced manufacturing, high-performance technology, motorsport, engineering design, aerospace, automotive testing, electronics, robotics and food and drink production. The area around Silverstone gives the region a particularly strong link to motorsport and performance engineering, while wider supply chains create practical, technical, creative and scientific roles close to home.

The sector is changing through automation, clean technology, robotics, digital design, 3D printing, data, artificial intelligence and the move towards net zero. Employers will need people who can combine practical skills with maths, science, digital confidence and creative problem solving.

# DID YOU KNOW...

The South Midlands is part of the UK's world-renowned high-performance engineering and motorsport cluster, with major activity linked to **Formula 1, precision engineering and advanced vehicle technology.**



Northamptonshire alone is home to **over 1,500 high-performance technology companies**, generating more than **£2 billion** each year.

Approx...

# 21,000

people are employed in the high-performance technology sector across the South East Midlands.

Estimated...

# 148,000

workers will be needed in priority advanced manufacturing occupations in England by 2035, including new jobs and replacement demand.

## The sector includes...

- **Motorsport**
- **Precision engineering**
- **Aerospace**
- **Automotive testing**
- **Robotics**
- **Electronics**
- **Software development**
- **Advanced manufacturing**

# WHAT JOBS CAN I DO?

## ENTRY LEVEL



### ENGINEERING TECHNICIAN

They assist engineers in designing and testing products, perform measurements and analysis.



### MANUFACTURING OPERATIVE

They work on production lines, operating machinery, assembling products and ensuring quality control.



### MAINTENANCE TECHNICIAN

They perform routine maintenance and repairs on machinery and equipment in a manufacturing facility.



## MID-LEVEL



### MECHANICAL ENGINEERING

They design and develop mechanical systems and products, conducting tests and evaluations.



### ELECTRICAL ENGINEER

They design, develop, and test electrical systems and equipment, ensuring safety and compliance.



### PROCESS ENGINEER

They analyse and improve manufacturing processes to increase efficiency and reduce costs.



## HIGHER LEVEL



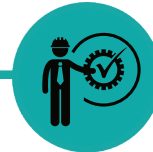
### ENGINEERING MANAGER

They lead engineering teams, oversee project developments, budgets and ensure technical excellence.



### MANUFACTURING MANAGER

They are responsible for the overall production process, managing staff, budgets and production goals.



### QUALITY ASSURANCE MANAGER

They oversee quality control processes, ensuring products meet regulatory and safety standards.



# WHERE ARE THE JOBS MOST NEEDED?



**AUTOMATION  
& ROBOTICS**



**PRODUCT  
DESIGN**



**MAINTENANCE  
ENGINEERING**



**PROCESS  
OPTIMISATION**



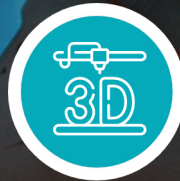
**ENERGY  
EFFICIENCY**



**QUALITY  
ASSURANCE**



**DATA &  
INFORMATION  
TECHNOLOGY**



**3D PRINTING &  
ADDITIVE  
MANUFACTURING**

# LOCAL EMPLOYERS INCLUDE...



# Essential Skills for Advanced Manufacturing, Engineering & Motorsport

Essential skills matter in every engineering job – from the workshop floor to design and management roles. Employers say these skills are just as important as qualifications.



## LISTENING

Workshops move fast. Listening to instructions, safety briefings and updates helps prevent mistakes and keeps everyone safe.



## SPEAKING

You'll need to explain problems, share updates and raise concerns with different people. Clear communication builds trust and teamwork.



## PROBLEM SOLVING

Things don't always go to plan. Employers value people who stay calm and help fix problems when issues come up.



## CREATIVITY

Engineering isn't just following drawings. Improving methods, reducing waste and adapting plans makes projects better and safer.



## ADAPTING

Tasks, priorities and conditions can change daily. Employers want flexible people who can adjust without stress.



## PLANNING

Managing your time, organising tasks and thinking ahead helps keep projects on schedule and on budget.



## LEADERSHIP

You don't need a job title to lead. Taking responsibility, setting a good example and supporting others really matters.



## TEAMWORK

Engineering is a team effort. Working well with others improves safety, quality and productivity.



**Engineering employers want people who can communicate, adapt, solve problems and work as part of a team – skills that matter in every workshop and in every role.**

Everyone brings different skills to engineering – reflect on yours and how they could fit in the workshop and beyond.



## LISTENING

*When have you listened carefully to instructions to complete a task safely or correctly?*



## SPEAKING

*When have you explained an idea, asked for help, or shared information clearly?*



## PROBLEM SOLVING

*When have you faced a challenge and found a way to fix or improve something?*



## CREATIVITY

*When have you come up with a new idea or better way of doing something?*



## ADAPTING

*When have you had to adjust your plans because something changed?*



## PLANNING

*When have you organised your time or steps to complete something successfully?*



## LEADERSHIP

*When have you taken responsibility or helped guide others?*



## TEAMWORK

*When have you worked with others to achieve a shared goal?*

# WHAT QUALIFICATIONS CAN HELP YOUR CAREER?

GCSE

## SECONDARY SCHOOL



**Mathematics:** Essential for calculations, technical design, and problem-solving in engineering and manufacturing.

**Physics:** Key for understanding mechanics, energy systems and material properties.

**Design & Technology:** Useful for developing practical skills in product design, modelling and manufacturing techniques.

**Computer Science/IT:** Important for working with automation, digital systems and engineering software.

**Engineering:** Provides foundation knowledge in mechanical and electronic systems.

## FURTHER EDUCATION



### A-LEVELS

**Mathematics:** Crucial for engineering calculations, modelling and technical analysis.

**Physics:** Builds understanding of forces, motion, and energy systems crucial for advanced manufacturing and engineering.

**Design & Technology:** Focuses on practical skills in designing and testing engineering solutions.

**Computer Science:** Useful for understanding software, automation and digital manufacturing technologies.

### VOCATIONAL COURSES

**Engineering:** Covers mechanical, electrical and advanced manufacturing principles with practical applications.

**Manufacturing Engineering:** Focuses on production processes, materials science and quality control.

**Design Engineering:** Includes product design, prototyping and manufacturing techniques.

### T-LEVELS

**Design and Development for Engineering and Manufacturing:** Specialises in mechanical, electrical and advanced manufacturing technologies with a focus on industry design and development skills.

**Design & Development for Engineering and Manufacturing:** Focuses on product design, prototyping and engineering development.

**Maintenance, Installation, and Repair:** Covers maintaining and repairing complex engineering systems and machinery.

SCAN OR CLICK  
THE QR CODE  
TO EXPLORE  
THE DIFFERENT  
PATHWAYS





# APPRENTICESHIPS

**Engineering Technician:** Gain hands-on experience in mechanical, electrical or manufacturing engineering.

Click or Scan the QR code to visit the IfATE Occupational Maps to explore the different Apprenticeships available

**Manufacturing Engineer Apprentice:** Work on production processes, materials handling and quality control.



**Design Engineering Apprentice:** Learn about product design, prototyping and manufacturing techniques.



**Robotics Technician:** Develop skills in installing, maintaining and programming robotic systems.

## HIGHER EDUCATION



### UNDERGRADUATE DEGREE

**Mechanical Engineering (BEng/BSc):** Focuses on designing, developing, and testing mechanical systems and products.

**Manufacturing Engineering (BEng/BSc):** Specialises in production processes, materials and manufacturing technologies.

**Electrical Engineering (BEng/BSc):** Covers electrical systems, automation, and control technologies used in manufacturing.

**Industrial Design (BDes/BSc):** Concentrates on designing products with a focus on functionality and manufacturability.

**Robotics Engineering (BEng/BSc):** Studies the design and application of robots and automation systems in manufacturing.

### POSTGRADUATE DEGREE

**Masters in Advanced Manufacturing (MSc):** Focuses on modern manufacturing techniques, smart factories and production efficiency.

**Masters in Mechanical Engineering (MSc):** Advanced study in mechanical systems, design and manufacturing.

**Masters in Robotics (MSc):** Specialises in robotic systems, automation and intelligent manufacturing technologies.

**Masters in Industrial Design (MSc):** Focuses on advanced product design and manufacturing processes.

# PROVIDERS ON YOUR DOORSTEP

You may be able to study or train locally for engineering and manufacturing through schools with sixth forms, FE colleges, independent training providers, universities, apprenticeship providers, employers, adult and community learning providers and specialist providers.

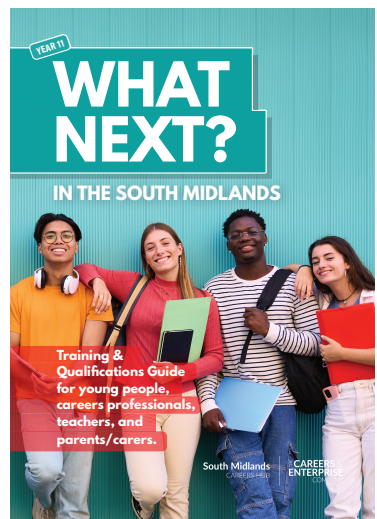
**College and sixth form routes:** A Levels, T Levels, applied/vocational courses and technical qualifications. Local students may look at school sixth forms, FE colleges and specialist colleges across Bedfordshire, Luton, Milton Keynes and Northamptonshire.

**Apprenticeship and training routes:** Apprenticeship training providers, employers, local authorities, NHS organisations, independent training providers and national providers with local sites may offer work-based routes.

**Higher education routes:** Foundation degrees, degrees, higher technical qualifications, degree apprenticeships and professional courses may be available through local universities, colleges with HE centres, or universities further afield.

**Employer encounters:** Careers fairs, workplace visits, employer talks, mentoring, work experience, virtual insight sessions, employer projects, alumni talks and industry challenges can help young people connect the booklet to real workplaces.

Find providers near you: add QR/link to South Midlands Careers Hub, Opportunities on Your Doorstep resources, local college/training provider pages and the current apprenticeship search.



# MY JOURNEY INTO THE ENGINEERING & MANUFACTURING SECTOR

Use this page for a real quote from a volunteer, employer, apprentice, T Level student, alumni or career changer. Suggested capture fields are below.

Capture field	Content to collect
Name	[Insert first name or full name, depending on consent]
Role	[Insert job title or training route]
Organisation	[Insert employer, provider or organisation]
My route	[How did they get into the sector? School subjects, college, apprenticeship, university, career change, volunteering, work experience?]
What I do	[One short paragraph explaining their day-to-day work]
The skills I use	[Link to Skills Builder skills, e.g. teamwork, speaking, problem solving]
My advice to young people	[One practical, encouraging piece of advice]

# CAREERS CONVERSIONS

Talk to someone at home, in school or in your community about engineering and manufacturing.

You could speak to a parent or carer, another family member, teacher, careers adviser, employer, someone who has done work experience, someone who works in the sector, or an older student/alumni.

1. What do you already know about this sector?
2. Do you know anyone who works in this sector?
3. What skills do you think would be useful?
4. What kind of person might enjoy this sector?
5. What questions should I ask if I meet an employer?
6. What advice would you give me about exploring careers?

Reflection: One thing I found out: \_\_\_\_\_

One question I still have: \_\_\_\_\_

One action I could take next: \_\_\_\_\_

# SECTOR RESEARCH ACTIVITY

Choose one job from engineering and manufacturing and research it.

Job title: \_\_\_\_\_

What does this person do?: \_\_\_\_\_

What skills do they need?: \_\_\_\_\_

What qualifications or training might help?:

\_\_\_\_\_

What subjects could be useful?:

\_\_\_\_\_

Could this job be done through an apprenticeship, college course, T Level, university or another route?: \_\_\_\_\_

What local employers or providers could help me explore this?:

\_\_\_\_\_

One thing that interests me about this job:

\_\_\_\_\_

One thing I would like to find out more about:

\_\_\_\_\_

# WHAT DO YOU KNOW?

1. Name one job in engineering and manufacturing.
2. Name one local employer, provider or organisation linked to engineering and manufacturing.
3. Name one Skills Builder skill that could help in this sector.
4. Name one school subject that could link to this sector.
5. Name one pathway into this sector.
6. What is one trend or challenge affecting this sector?
7. What is one question you would ask an employer?
8. Would you like to explore this sector further? Why or why not?

Confidence scale: Before reading this guide, I understood this sector: 1 2 3  
4 5

# WHAT NEXT?

**Name:**

**Date:**

**I would like to be:**

**The reasons I chose this are:**

**Qualifications and training  
required:**

**Skills I have:**

**Skills I need to develop:**

**My next steps are:**

**Reviewing my progress:**

# POST 16 PATHWAYS INTO ADVANCED MANUFACTURING, ENGINEERING AND MOTORSPORT

## A-LEVELS

IDEAL IF...	ENTRY...	WHAT IT'S LIKE...	LEADS TO...
You enjoy classroom learning and want to keep options open.	5 x GCSEs (Grade 4+) Some subjects need Grade 5-6	<ul style="list-style-type: none"><li>• Classroom-based</li><li>• Exams + coursework</li><li>• 2 years</li></ul>	<ul style="list-style-type: none"><li>• University</li><li>• Degree apprenticeships</li><li>• Professional roles</li></ul>

**GREAT FOR CAREERS IN** MECHANICAL & AEROSPACE ENGINEERING, PRODUCT DESIGN, MANUFACTURING, MOTORSPORT, PROJECT MANAGEMENT.

## TELEVELS

IDEAL IF...	ENTRY...	WHAT IT'S LIKE...	LEADS TO...
You want a mix of learning and real industry experience.	4-5 GCSEs (Grade 4+) Course-dependent	<ul style="list-style-type: none"><li>• Practical + classroom</li><li>• 45-day industry placement</li><li>• 2 years (equal to 3 A-Levels)</li></ul>	<ul style="list-style-type: none"><li>• Apprenticeships</li><li>• Skilled technical jobs</li><li>• Some university routes</li></ul>

**GREAT FOR CAREERS IN** DESIGN & DEVELOPMENT, MANUFACTURING ENGINEERING, ROBOTICS & AUTOMATION, CAD/CAM, TECHNICAL ENGINEERING ROLES.

## VOCATIONAL COURSES

IDEAL IF...	ENTRY...	WHAT IT'S LIKE...	LEADS TO...
You prefer practical learning and coursework.	From Grade 3+ (Level 2) Level 3 usually Grade 4+	<ul style="list-style-type: none"><li>• Hands-on learning</li><li>• Coursework-based</li><li>• College or training provider</li></ul>	<ul style="list-style-type: none"><li>• Apprenticeships</li><li>• Employment</li><li>• Further or higher study</li></ul>

**GREAT FOR CAREERS IN** MACHINING (CNC), WELDING & FABRICATION, MECHATRONICS, ELECTRICAL ASSEMBLY, QUALITY INSPECTION, PRODUCTION ROLES.

## APPRENTICESHIPS

IDEAL IF...	ENTRY...	WHAT IT'S LIKE...	LEADS TO...
You would like to earn while you learn.	Varies by employer English + Maths Some need specific grades	<ul style="list-style-type: none"><li>• Workplace-based</li><li>• Job training + study</li><li>• 1-6 years</li></ul>	<ul style="list-style-type: none"><li>• University</li><li>• Degree apprenticeships</li><li>• Professional roles</li></ul>

**GREAT FOR CAREERS IN** MACHINING, WELDING, MAINTENANCE, MECHATRONICS, MOTORSPORT, TECHNICAL ROLES (INC DEGREE APPRENTICESHIPS).

# MORE INFORMATION

Scan or click on the QR codes to become more informed about the different jobs and education and training options available to you.

## TBC

Explore graduate roles, apprenticeships, or volunteering opportunities.

SCAN ME



## NATIONAL CAREERS SERVICE

Explore over 750 different careers. Find out what a job involves and if it's right for you.

SCAN ME



## BBC BITESIZE

Explore job profiles for tips and advice from young people working in the sector.

SCAN ME



## TBC

Explore what's happening across other sectors in the South Midlands.

SCAN ME

