



# irtec overview

## What is irtec?

irtec is recognition of an individual's current competence, and their commitment to an ethical code of conduct in the commercial vehicle, trailer and passenger carrying vehicle industries.

Technicians who take irtec assessments are tested on their theoretical and practical skills and, if successful, are awarded an irtec licence. An irtec licence certifies the individual rather than the employer and as irtec is based on current competence, licences expire after five years.

The accreditation provides a national benchmark of skill which may be used to identify training needs and also in the recruitment of technicians. irtec can be used by individuals and employers as a recognised development path to allow technicians to further their skills and knowledge in the sub-sector in which they operate.

Employers can be confident that technicians are fairly but rigorously assessed through the Quality Assurance of a nationally recognised Awarding Organisation, thus providing consistency of the assessment process.

irtec is delivered by a partnership that includes IRTE (Institute of Road Transport Engineers), The Institute of the Motor Industry (IMI) and IMI Awards.

## Available routes and levels

irtec offers licences at four benchmark career levels which reflect a technician's job role and experience. Licences can be taken in various vehicle classes including Large Commercial Vehicle (LCV), Bus & Coach (B&C) and Heavy

Vehicle Trailer (HVT). Technicians are assessed on both practical competence and theoretical knowledge.

## Benefits for individuals and employers

As an indicator of best practice and competence, irtec provides recognition and opportunities for professional development.

### Employers

Show your commitment to compliance and standards

- Identify any training needs
- Maintain confidence in technicians' skills
- Boost customer confidence in vehicle safety
- Gain a competitive advantage
- Prove commitment to the professional development of staff

### Technicians

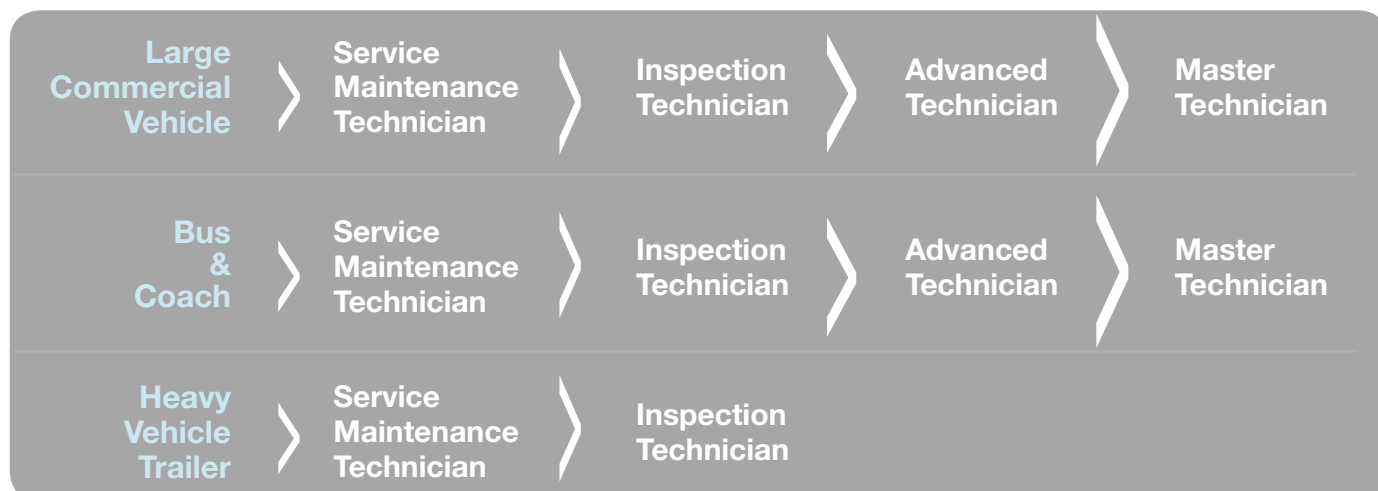
Be recognised as a competent professional

- Gain recognition of skills and technical expertise
- Prove current competence
- Appear on the irtec register
- Demonstrate commitment to professional development
- Receive a free Halfords Trade Card

## How does a technician become licensed?

There are 5 simple steps to proving current competency:

- Visit [irtec.org.uk](http://irtec.org.uk) and take the self-assessment to identify correct level
- Find nearest irtec assessment centre on [irtec.org.uk](http://irtec.org.uk)
- Contact irtec assessment centre to arrange an assessment
- Complete assessments
- After successful completion receive certified recognition and licence



## irtec maintenance and repair level

This irtec route is intended for technicians who carry out maintenance, fault diagnosis and repair of either Large Commercial Vehicles or Passenger Carrying Vehicles.

The technician must be able to work unsupervised and ideally be in full time employment to ensure they are familiar with the skills, knowledge and techniques associated with vehicle maintenance and repair activities.

Technicians wishing to achieve accreditation must successfully complete a full assessment. There are three levels available. Specific criteria is noted below:

### Service Maintenance Technician

- Ideally in full time employment with at least two years experience
- Complete the practical tasks below and a 30 question underpinning knowledge test

Routes: Large Commercial Vehicle, Bus & Coach, Heavy Vehicle Trailer

Braking Systems	50 mins
Engine Electrical Systems	50 mins
Engine Mechanical Systems	50 mins
Hydraulic/Pneumatic Systems	50 mins
Wheel Alignment & Steering	50 mins

### Advanced Technician

- Ideally in full time employment with at least three years experience
- Complete the practical tasks below and a 30 question underpinning knowledge test

Routes: Large Commercial Vehicle, Bus & Coach

Engine Electrical Systems	60 mins
Mechanical Systems	60 mins
Braking Systems	60 mins
Chassis Systems	60 mins
Electrical Systems	60 mins

### Master Technician

- Ideally in full time employment with at least five years experience
- Complete the practical tasks below and a 30 question underpinning knowledge test

Routes: Large Commercial Vehicle, Bus & Coach

Electrical System Diagnostics	60 mins
Computer Based Test Equipment	60 mins
Diesel Fuel & Emission Systems	60 mins
Instructional Support	60 mins
Effective Communication	60 mins



Timings are approximate and may vary depending on candidate capability.

# irtec service maintenance technician

## Braking Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to correctly measure components and compare to manufacturers specification
- 1.4 Demonstrate ability to correctly measure components and compare to manufacturers specification
- 1.5 Demonstrate ability to remove & replace braking system components correctly
- 1.6 Demonstrate ability to correctly adjust clearances following component replacement
- 1.7 Demonstrate ability to reset spring brakes after replacing braking components
- 1.8 Demonstrate ability to correctly check footbrake and parkbrake operation after replacement
- 1.9 Demonstrate correct use of hand tools throughout task
- 2.0 Demonstrate correct use of measuring equipment
- 2.1 Task completed within time

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of air braking systems
- Methods and techniques used to remove/replace components
- Methods and techniques of measuring components/assessing serviceability

## Engine Electrical Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate correct disconnection and reconnection of components/connectors
- 1.4 Demonstrate ability to perform basic checks (wiring/connections etc)
- 1.5 Demonstrate correct procedure used to retrieve fault codes
- 1.6 Demonstrate ability to correctly identify fault
- 1.7 Demonstrate correct use of hand tools throughout task
- 1.8 Demonstrate correct use of diagnostic equipment
- 1.9 Task completed within time limit

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Computer based test equipment operation
- Computer based test equipment fault codes
- Component functionality within vehicle systems

## Engine Mechanical Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate correct procedures used to adjust valve clearances
- 1.4 Demonstrate ability to adjust valve clearances correctly
- 1.5 Demonstrate ability to use correct specifications
- 1.6 Demonstrate engine rotated in correct DOR
- 1.7 Demonstrate engine rotated using the correct tool
- 1.8 Demonstrate correct use of hand tools throughout task
- 1.9 Demonstrate correct use of measuring equipment
- 2.0 Task completed within time limit

## Engine Mechanical Systems

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of compression ignition engines
- Tools and equipment used to remove/replace/adjust components
- Methods and techniques of measuring components/clearances

## Hydraulic/Pneumatic Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Ensure hydraulic/pneumatic unions correctly disconnected/reconnected
- 1.4 Demonstrate ability to correctly bleed hydraulic system
- 1.5 Demonstrate ability to correctly align components
- 1.6 Demonstrate ability to check for leaks from hydraulic/pneumatic system following component replacement
- 1.7 Demonstrate ability to check correct operation of systems on completion of task
- 1.8 Demonstrate correct use of hand tools throughout task
- 1.9 Task completed within time limit

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of hydraulic/pneumatic systems
- Methods and techniques used to remove/replace components
- Specialist tools used to remove/replace hydraulic/pneumatic system components

## Wheel Alignment & Steering

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to correctly remove/replace steering system components
- 1.4 Demonstrate ability to calibrate alignment before use
- 1.5 Demonstrate correct specifications used
- 1.6 Demonstrate correct procedure used to adjust wheel alignment
- 1.7 Ensure wheel alignment set within specification
- 1.8 Ensure locknuts tightened following adjustment
- 1.9 Demonstrate correct use of hand tools throughout task
- 2.0 Demonstrate correct use of wheel alignment equipment
- 2.1 Task completed within time limit

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Steering system components and their operation
- Principles of wheel alignment including Ackerman principle
- Tools and equipment used to check wheel alignment
- Procedures and techniques used to check and adjust wheel alignment

# irtec advanced technician

## Engine Electrical Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to carry out basic system pre-checks
- 1.4 Correct identification of current and stored fault codes
- 1.5 Correct identification of system components
- 1.6 Demonstrate ability to correctly interpret wiring diagrams
- 1.7 Demonstrate methodical diagnosis process relevant to the symptoms
- 1.8 Demonstrate ability to access and interpret technical data
- 1.9 Demonstrate ability to use recognised procedures for testing components
- 2.0 Demonstrate the ability to use diagnostic/test equipment
- 2.1 Task completed within time and report any anticipated delays
- 2.2 Correct explanation of the diagnostic process and correct answers to additional questions

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Computer based test equipment operation
- Component functionality within vehicle systems
- Network communication system operation

## Mechanical Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to correctly identify air braking system components
- 1.4 Demonstrate ability to carry out air braking system pre-checks correctly
- 1.5 Demonstrate correct interpretation of technical data
- 1.6 Demonstrate ability to correctly identify primary & secondary fault
- 1.7 Demonstrate methodical process employed to obtain diagnosis
- 1.8 Task completed within time and report any anticipated delays
- 1.9 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of engines and transmissions
- Tools and equipment used to measure/check mechanical components
- Procedures and techniques used to measure/check mechanical components

## Braking Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to correctly identify air braking system components
- 1.4 Demonstrate ability to carry out air braking system pre-checks correctly
- 1.5 Demonstrate correct interpretation of technical data
- 1.6 Demonstrate ability to correctly identify primary & secondary fault
- 1.7 Demonstrate methodical process employed to obtain diagnosis
- 1.8 Task completed within time and report any anticipated delays
- 1.9 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of air braking systems including ABS/EBS
- Diagnostic equipment used for air braking system fault diagnosis
- Procedures and techniques to diagnose Air Braking System faults

## Chassis Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate ability to carry out system pre-checks correctly
- 1.4 Demonstrate ability to correctly inspect system components
- 1.5 Demonstrate correct procedure in carrying out system functionality checks
- 1.6 Demonstrate correct preparation and connection of test equipment
- 1.7 Ability to correctly interpret technical data/repair procedures
- 1.8 Ability to correctly identify fault/additional faults
- 1.9 Demonstrate methodical diagnosis process relevant to the symptoms
- 2.0 Task completed within time and report any anticipated delays
- 2.1 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Operating principles of chassis components including Power Assisted Steering & Electronically Controlled
- Air Suspension Systems (ECAS)
- Diagnostic equipment used for chassis system fault diagnosis
- Procedures and techniques to diagnose chassis system faults

## Electrical Systems

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Ability to correctly identify system components
- 1.4 Carry out wiring harness checks correctly
- 1.5 Demonstrate correct preparation and connection of test equipment
- 1.6 Demonstrate correct procedure in carrying out component checks
- 1.7 Ability to correctly interpret wiring diagram/s
- 1.8 Ability to correctly identify the fault/additional faults
- 1.9 Demonstrate methodical diagnosis process relevant to the symptoms
- 2.0 Ability to carry out repairs using correct materials in the approved manner
- 2.1 Task completed within time and report any anticipated delays
- 2.2 Correct explanation of the diagnostic process and correct answers to additional questions

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Electrical values i.e. volts, amps, ohms etc
- Electrical circuit faults and testing procedures
- Approved repair procedures of wiring harnesses
- The effect of poorly repaired wiring harnesses

# irtec master technician

## Electrical System Diagnostics

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate the ability to determine a logical path to diagnose electrical faults relevant to the systems
- 1.4 Demonstrate ability to carry out basic system pre-checks
- 1.5 Demonstrate the ability to diagnose vehicle electrical fault/s accurately using different methods to identify high resistance/short circuit/open circuit
- 1.6 Demonstrate the ability to diagnose vehicle electrical fault/s accurately when the system is integrated within a network communication system
- 1.7 Demonstrate the ability to correctly use electrical test equipment
- 1.8 Demonstrate the ability to accurately interpret technical information
- 1.9 Demonstrate the accurate application of the wiring diagram to the vehicle during the diagnostic process
- 2.0 Task completed within time and report any anticipated delays
- 2.1 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Electrical values i.e. ohms, amps, volts
- Diagnosing network communication system(s) (e.g. CAN)
- How vehicle electrical systems link and integrate with vehicle communication networks
- Vehicle digital network protocols

## Computer Based Test Equipment

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate the ability to carry out basic system pre-checks
- 1.4 Demonstrate the ability to communicate with vehicle systems using suitable test equipment
- 1.5 Demonstrate the ability to carry out system functional checks with diagnostic test equipment
- 1.6 Demonstrate the ability to read and interpret information including fault codes and live data
- 1.7 Demonstrate the ability accurately diagnose faults either without prescribed procedures driven from a fault code or multiple faults
- 1.8 Ability to configure/reconfigure systems and conduct appropriate tests to ensure all systems are functioning correctly
- 1.9 Task completed within time and report any anticipated delays
- 2.0 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Network communication system (CAN) and the integration with other vehicle systems
- Diagnostic equipment connection procedure/s
- Calibrating vehicle systems/components
- Update vehicle control unit's with software held in scan tool / diagnostic test equipment
- Checking of vehicle systems functionality after updating the system software



## Diesel Fuel & Emission System

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ensure appropriate vehicle care taken throughout task
- 1.2 Demonstrate safe working practice throughout task
- 1.3 Demonstrate the ability to carry out basic system pre-checks
- 1.4 Demonstrate the ability to carry out system functional checks with diagnostic test equipment
- 1.5 Demonstrate the ability to access and interpret technical data
- 1.6 Demonstrate the ability to accurately diagnose faults on diesel fuel and emission systems
- 1.7 Task completed within time and report any anticipated delays
- 1.8 Correct explanation of the diagnostic process

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Common rail diesel fuel system operation
- Selective Catalytic Reduction (SCR) system operation
- Exhaust Gas Recirculation (EGR) system operation
- Diagnosing common rail diesel fuel system faults
- Diagnosing Selective Catalytic Reduction (SCR) system faults
- Diagnosing Exhaust Gas Recirculation (EGR) system faults

## Instructional Support

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Ability to comply with all health and safety requirements relative to the assessment for all parties
- 1.2 Ability to select appropriate training aids to allow the required knowledge to be imparted to the learner
- 1.3 Demonstrate knowledge of subject throughout the activity and ability to answer questions from the learner
- 1.4 Demonstrate the ability to transfer knowledge to the learner
- 1.5 Demonstrate the ability to confirm the knowledge has been transferred to the learner
- 1.6 Ability to use language the learner understands
- 1.7 Demonstrate the ability to coach/mentor others

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Planning effective instructional support activities
- Delivering effective instructional support activities

## Effective Communication

### Skills requirements

The candidate must demonstrate the ability to:

- 1.1 Demonstrate the ability to create a positive rapport
- 1.2 Demonstrate active listening skills
- 1.3 Demonstrate effective questioning skills
- 1.4 Ability to use positive body language including maintaining eye contact
- 1.5 Ability to maintain control and professional approach throughout the task
- 1.6 Ability to use clear, jargon free terminology

### Knowledge requirements

The candidate must indicate a sound knowledge of:

- Effective communication within the workplace and its importance
- Questioning techniques and methods
- Relevant legislation including health and safety and employment



To undertake a self assessment  
or find your nearest centre  
visit [www.irtec.org.uk](http://www.irtec.org.uk)

[www.irtec.org.uk](http://www.irtec.org.uk) | [irtec@irtec.org.uk](mailto:irtec@irtec.org.uk) | 020 7630 1111