

## Agricultural Engineering

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- National Certificate/Diploma in Land-based Technology
- First Diploma in Land-based Technology
- NVQ Level 3 in Land-based Service Engineering
- NVQ Level 2 in Land-based Service Engineering



## Agricultural Engineering

All those familiar with modern agriculture will appreciate the crucial role that machinery plays in this industry. As machinery becomes more complex, more and more people with specialist technical training will be required to operate, maintain and support this equipment.

Given the complexity and high capital value of machinery, good career opportunities exist in this sector. There are also excellent progression opportunities for those wishing to further their studies.

### Facilities

The Machinery and Buildings Centre was specifically designed and constructed to accommodate all of the engineering, mechanisation and building training at Greenmount Campus. A range of workshops facilitates training in service engineering (agriculture and professional ground care), tractor testing, precision engineering, welding and fabrication, as well as building and estate maintenance skills.

### Equipment

Greenmount Campus is well equipped in terms of hand tools, power tools and other specialist equipment. In addition, numerous models and display rigs have been set up to demonstrate specific aspects relevant to the programme. Of particular note is a modern alternator-based PTO dynamometer capable of testing tractors up to 300kW (400hp).

### Tractors and implements:

The Campus operates a fleet of modern tractors of varying makes ranging in power from 15kW (20hp) to 101kW (135hp). Some are used on the farms and the estate while others are specifically dedicated to student training. In addition, a wide range of implements complement the tractor fleet. All machinery used on

the estate is available for students to operate and maintain. The College enjoys excellent relationships with the major machinery manufacturers and has access to specialist equipment such as self-propelled forage harvesters on a temporary basis when required.



## Agricultural Engineering

**“I would certainly recommend this course to anyone wishing to follow a career in the agricultural machinery business sector.”**

Career profile: Philip White

Philip, from Portglenone completed his National Diploma in 2005. Since then he has been employed in agriculture machinery sales. He commenced work with Saville Tractors immediately after his course in 2005 and then moved to Hunter Kane and Son in 2006. Philip has recently started work with John McElderry's in Ballymoney.

“I enjoy the challenge of machinery sales as it gives me the opportunity to work on my own initiative, as well as being part of a dedicated sales and dealership team. The course at Greenmount gave me the knowledge and skills on topics such as tractor transmissions and vacuum pumps, to back me up whenever I am negotiating with farmers. I would certainly recommend this course to anyone wishing to follow a career in the agricultural machinery business sector.”



# Agricultural Engineering

National Certificate / Diploma in Land-based Technology

This course is aimed at those who wish to follow a career in the wider engineering sector e.g. as a service technician or in machinery management or those who wish to progress to a higher-qualification.

## Fact File

### Course duration:

Certificate: One year full-time including work experience  
Diploma: Two years full-time including work experience.

### Entry requirements:

Four GCSEs at Grade C or above including Maths and preferably English, or a First Diploma in Land-based Technology achieved with Merit, or where applicants are over 18, duration of relevant industry experience, performance in a multiple choice assessment and an interview may be used to determine suitability.

### Progression opportunities:

Students may progress from the National Certificate onto the National Diploma in Land-based Technology (one year top up) or onto the NVQ Level 3 in Land-based Service Engineering. Students may progress from the National Diploma onto a Foundation Degree or Higher National Diploma or Honours Degree depending on results achieved.

### Course location:

Greenmount Campus.

### Course Manager:

George Wallace  
Telephone: 028 9442 6626  
Email: george.wallace@dardni.gov.uk

## Course content

First year units include:

- Cultivation and planting machinery
- Diagnosis and rectification of faults
- Electrical and electronic systems
- Harvesting equipment - arable
- Hydraulic / pneumatic principles
- Mechanical power transmission
- Principles of land based machinery
- Repair processes and materials technology
- Vehicle chassis systems
- Vehicle engine technology
- Vehicle transmission systems

National Certificate students are required to complete a ten week period of work experience in a machinery dealership or garage following the completion of the College-based units.

The National Certificate is awarded on the completion of 12 units.

National Diploma students are required to complete a six month work placement from June to November. Students have the opportunity to work in a range of businesses for example large scale arable farms, agricultural contractors, engineering manufacturers or machinery dealerships.

The National Diploma is awarded on the completion of 18 units.

Final year units include:

- Application equipment
- Computer aided design (CAD)
- Engineering drawing
- Harvesting equipment - grassland
- Individual project
- Machinery management
- Maths (optional)

### Career destinations

Students will gain employment in large mechanised farms, in machinery businesses and in contracting businesses or progress to higher education courses.



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## Student profile:

Stephen McKean



" I have always loved working with machinery on my home farm and I was really pleased to get an offer to study a machinery related programme at Greenmount. One of the things that attracted me to the course was the work experience element. I completed five months with Cowan Brothers in Eglinton, working in the repair workshop, where I really enjoyed the new challenges set each day. My work placement gave me the chance to work with a range of machines and it was great to be able to put into practice the knowledge and skills that I learned in my first year at Greenmount. I now have much more confidence in my own abilities. I am now looking forward to completing the National Diploma course which I know will help me to get a really good job in the future."



# Agricultural Engineering

First Diploma in Land-based Technology

This course is aimed at those who are interested in repairing and maintaining machinery but have few formal qualifications. The First Diploma is a good first step on the path to a career in the machinery sector.

## Fact File

### Course duration:

Seven months full-time including work experience.

### Entry requirements:

Two Grade Cs or three Grade Ds at GCSE.

### Progression opportunities:

Students may progress onto the National Diploma in Land-based Technology, depending on results achieved, or onto the NVQ Level 2 in Land-based Service Engineering.

### Course location:

Greenmount Campus.

### Course Manager:

George Wallace  
Telephone  
028 9442 6626  
Email: [george.wallace@dardni.gov.uk](mailto:george.wallace@dardni.gov.uk)

## Course content

- Introduction to land-based workshop practice
- Introduction to the principles of land-based machinery
- Routine vehicle maintenance
- Vehicle component removal and refitting techniques
- Vehicle engine system principles
- Vehicles wheels, tyres, steering and suspension systems - principles and maintenance systems
- Work-related experience

## Career destinations

The majority of students will find employment as trainee fitters in the machinery service sector. Those obtaining such employment can work towards a NVQ Level 2 award in Land-based Service Engineering. Alternatively, students may progress onto the National Certificate/Diploma in Land-based Technology, depending on their results.

## Student profile:

James McIlroy



"I particularly enjoy the hands-on approach of the course. My knowledge and practical skills have greatly improved. I am really looking forward to my placement, working for my local machinery dealer. This will provide me with the opportunity to increase my understanding and experience of agricultural repairs in a real work environment. After completing the First Diploma, I hope to secure employment with a local machinery dealer, at which point I will be in a position to start the NVQ Service Engineering course and work towards a career as a Service Technician."

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# Agricultural Engineering

NVQ Level 3 in Land-based Service Engineering

This course leads to the nationally recognised vocational qualification for technicians working in the machinery service and repair sector. The qualification is obtained through a work-based programme and is normally undertaken following the completion of an appropriate feeder qualification.

## Fact File

### Course duration:

Up to two years day release (depending on experience)

### Entry requirements:

National Award/Certificate in Land-based Technology or NVQ Level 2 in Land-based Service Engineering. Applicants aged over 18 will be considered on an individual basis.

### Progression opportunities:

Students may progress onto an appropriate Foundation Degree or Higher National Certificate at other institutions.

### Course location:

Greenmount Campus.

### Course Manager:

George Wallace  
Telephone  
028 9442 6626  
Email: george.wallace@dardni.gov.uk

## Course content

- Carry out testing of tractors and machinery
- Co-ordinate work activities
- Diagnose faults in tractors and machinery
- Dismantle, assemble and repair components in tractors and machinery
- Establish and meet customers' technical requirements
- Maintain health and safety in the work environment
- Repair and modify components by welding

## Career destinations

As the course is work-based, prospective students must be employed as service technicians before enrolling on the programme. Once qualified, service technicians may continue in their present role and obtain supervisory or management positions.

## Student profile:

David Watterson



" I come from a farming background and have always had an interest in agricultural machinery so I started working for an agricultural contractor in my spare time. I really enjoyed repairing and servicing the contractor's machines and decided to study at Greenmount towards a formal qualification. I am now employed with RB Agri, having completed the NVQ Level 2 in Service Engineering and am working towards a NVQ Level 3 qualification. The ability to combine training with time spent in a workshop was one of the things which attracted me to the course at Greenmount."

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NVQ Level 2 in Land-based Service Engineering

This award is a vocational qualification for those with some formal training in machinery maintenance and repair, who wish to obtain a work-based qualification.

## Fact File

### Course duration:

Up to two years (depending on rate of progress).

### Entry requirements:

Successful completion of a First Diploma in Land-based Technology. Applicants aged over 18 will be considered on an individual basis.

### Progression opportunities:

Students may progress onto a NVQ Level 3 Award.

### Course location:

Greenmount Campus.

### Course Manager:

George Wallace  
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This is a block release programme and is normally studied following the completion of a relevant First Diploma course.

## Course content

- Contribute to effective work activities
- Contribute to health and safety
- Maintain the condition of tractors and machinery
- Maintain the work area
- Move loads
- Remove and replace components from tractors and machinery
- Repair components by soldering and welding
- Shape components using hand tools

## Career destinations

As the course is work-based, prospective students must be employed as fitters or mechanics before enrolling on the programme. Many will progress to service technician posts with their employers and undertake further qualifications.

## Student profile:

Michael Campbell



Michael completed a First Diploma in Land Based Technology in May 2008 and is now working towards a NVQ Level 2 in Land-based Service Engineering while working for a John Deere dealership in Lisburn.

" I have always been keen on doing repairs to tractors and machinery on my home farm and decided to pursue my interest and become a service technician by enrolling at Greenmount. The course was good preparation for my current job as I am now able to put into practice the things I learned. One of the things that attracted me to the NVQ programme is that you can develop your skills and abilities while working in a busy dealership."