The new and innovative MSc ensures the student receive high employability for use within industry, business and the public sector. Having close collaboration with many organisations that employ Data Scientists, Operational Researchers, Statisticians, Computer Scientists, and Financial Modellers, students will have the opportunity for an industrial based 3-month dissertation project, allowing you to gain real-world experience and appreciation, helping you stand out from the crowd when applying for jobs.

Our programmes give you the opportunity for you to put the theory into practice, through case studies and project work in the ‘real-world’. An important feature of the MSc is the project dissertation, allowing you to work with an external company.

The programmes will prepare you with essential techniques in Operational Research and Applied Statistics, and then you to select from optional courses in topics such as supply chain modelling, healthcare, and Statistics and Operational Research for Government (delivered with input from the Office for National Statistics and Welsh Government).

The MSc, with its financial risk, which is a unique programme combination in the UK, is for those who wish to study in greater depth risk models, particularly for application in financial markets but also to other sectors. As well as developing the foundations in Operational Research and Applied Statistics, you will study further topics in actual modelling and credit risk scoring.

Bill Gates
Chief Data Scientist – Office for National Statistics

Chairman, forasterous model and professional skills to help me think logically and understand how to use mathematical and statistical models to enhance our work. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

Taking part in the MSc programme has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently, I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad, Graduate

The programme offered a suitable balance of statistical theory and practical tools to help me think logically and understand how to use mathematical and statistical models to solve problems. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

Taking part in the MSc programme has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently, I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad, Graduate

The programme offered a suitable balance of statistical theory and practical tools to help me think logically and understand how to use mathematical and statistical models to solve problems. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

Taking part in the MSc programme has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently, I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad, Graduate

The programme offered a suitable balance of statistical theory and practical tools to help me think logically and understand how to use mathematical and statistical models to solve problems. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

Taking part in the MSc programme has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently, I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad, Graduate

The programme offered a suitable balance of statistical theory and practical tools to help me think logically and understand how to use mathematical and statistical models to solve problems. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

Taking part in the MSc programme has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently, I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad, Graduate

The programme offered a suitable balance of statistical theory and practical tools to help me think logically and understand how to use mathematical and statistical models to solve problems. This equipped me with skills to solve a number of problems. All of this helped me get my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.
MSc Programmes
Operational Research and Applied Statistics
Operational Research, Applied Statistics and Financial Risk can provide the vital analytical, statistical and computing skills that we look for when recruiting postgraduates. organise better decisions.

extracting and handling ‘big data’, discovering

You with a range of in-demand skills for

experiences of applying methods drawn from

inform decision making.

sizeable data and to extract insights to help

effectively with handling such complex and

There is a significant and growing demand

and is being collected on a massive scale.

Statistics

Chief Data Scientist

office for national

Chief Data Scientist

cardiff.ac.uk/mathematics

MSc in Data Science and Analytics

MSc in Operational Research and Applied Statistics

MSc in Operational Research, Applied Statistics and Financial Risk

School of Mathematics

Masters Programmes

Operational Research and Applied Statistics

Operational Research, Applied Statistics, and Financial Risk Data Science and Analytics

(in collaboration with the School of Computer Science & Informatics)

Cardiff: The City

Bill Gates

Chief Data Scientist

Office for National Statistics

A city with both heritage and ambition, Cardiff offers a distinctive character, a good quality of life, and a growing national and international reputation. As the capital city of Wales it is home to many notable institutions including the National Museum of Wales and the much-admired Millennium Stadium. The city centre is a testimony to its heritage and industrial past, along with an emerging tasting scene ranging from the create civic centre to the historic Cardiff Castle.

Amira Irshad, Graduate

The programme offered a suitable balance of detailed theory and practical tasks to help me think logically and understand how to apply the methods learned to real-life problems. The project work equipped me with skills to solve a number of interesting problems. All of this helped me gain my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Leigh Perryman, Graduate

During my time in the MSc programme I have used the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that I have learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Anita Irwin, Graduate

The programme offered a suitable balance of detailed theory and practical tasks to help me think logically and understand how to apply the methods learned to real-life problems. The project work equipped me with skills to solve a number of interesting problems. All of this helped me gain my current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

Taking part in the MSc programme has been of immense benefit to me in my current job with the Welsh Government. I am using my statistical knowledge to model social care improvement.

Our innovative MSc programmes will equip you with the necessary analytical skills, methods and ways of thinking to tackle and analyse complex organisational problems, help make better decisions, and to become confident statistical analysts. Delivered by experts in the fields of Operational Research and Statistics, the skills that you will learn are highly transferable for use within industry, business and the public sector.

You will study a variety of problem-solving techniques, allowing you to build and use mathematical and statistical models, alongside, with supportive advice to communicate effectively to others. Our programme gives you the opportunity for you to put the theory into practice, through relevant modules and the project dissertation, allowing you to work with an external company.

Programme content

The programmes prepare you with essential techniques in Operational Research and Applied Statistics, and then you will select from optional courses in topics such as supply chain modeling, healthcare, and Statistics and Operational Research for Government (delivered with input from the Office for National Statistics and Welsh Government).

The MSc in Financial Risk, which is a unique programme combination in the UK, is for those who wish to study in greater depth risk models, particularly in applications to financial markets but also to other sectors. As well as addressing the fundamentals in Operational Research and Applied Statistics, you will study further topics in actuarial financial modelling and credit risk scoring.
The new and innovative MSc ensures the skills learnt are highly transferable for use within industry, business and the public sector. Having close collaboration with many organisations that employ Data Scientists, Operational Researchers, Statisticians, Computer Scientists, and Financial Modellers, students will have the opportunity for an industrial based 3-month dissertation project, allowing you to gain real-world experiences and appreciation, helping you stand out from the crowd when applying for jobs.

As a large employer in this field at the forefront of the data revolution, we wholeheartedly welcome Cardiff University’s MSc in Operational Research, Applied Statistics and Financial Risk. As Chief Data Scientist - Office of National Statistics, I can provide the vital analytical, statistical and computing skills that we look for when recruiting postgraduates.

Bill Davies
Chief Data Scientist
Office of National Statistics

This programme offers a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

I now use the context and principles of Operational Research and Applied Statistics, and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Levi, elegant, confident, cosmopolitan, Cardiff caters for all tastes, offering everything from the excitement of a vibrant city life to the peace and tranquillity of the nearby coast and countryside.

Amir Hazledine, Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

The programme offered a suitable balance of practical experience and theoretical knowledge to help me think logically and understand how to communicate effectively to others. It has given me the skills and confidence to look at any problem from an analytical perspective and then utilise the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Amira Irshad
Graduate

This new and innovative MSc ensures the skills learnt are highly transferable for use within industry, business and the public sector. Having close collaboration with many organisations that employ Data Scientists, Operational Researchers, Statisticians, Computer Scientists, and Financial Modellers, students will have the opportunity for an industrial based 3-month dissertation project, allowing you to gain real-world experiences and appreciation, helping you stand out from the crowd when applying for jobs.

The innovative MSc programmes will equip you with the necessary analytical skills, methods and ways of thinking to tackle and analyse complex organisational problems, help make better decisions, and to become confident statistical analysts.

Delivered by experts in the fields of Operational Research and Statistics, the skills that you will learn are highly transferable for use within industry, business and the public sector.

You will study a variety of problem-solving techniques, allowing you to build and use mathematical and statistical models, alongside lessons on effective statistical analysis and communication skills. A wide range of optional courses will be offered allowing you to tailor the MSc to suit your future career goals.

School of Mathematics

Masters Programmes

Operational Research, Applied Statistics
Operational Research, Applied Statistics and Financial Risk
Data Science and Analytics

(card in collaboration with the School of Computer Science & Informatics)

The programmes will prepare you with essential techniques in Operational Research and Applied Statistics, and then you to select from optional courses in topics such as supply chain modelling, healthcare, and Statistics and Operational Research for Government (delivered with input from the Office for National Statistics for Government (delivered with input from the Office for National Statistics and Welsh Government).

The MSc with Financial Risk, which is a unique programme combination in the UK, is for those who wish to study in greater depth risk models, particularly for application to financial markets but also to other sectors. As well as including the foundations in Operational Research and Applied Statistics, you will study further topics in actuarial financial modelling and credit risk scoring.
Students may then choose from a range of interesting and varied option modules from the list below:

### Programme Structure and Content

#### MSc in Operational Research and Applied Statistics

**Programme Structure and Content**

Students may then choose from a range of interesting and varied option modules from the list shown below.

- **Optimisation**
  - Inventory Control
  - Analysis of Variance
- **Computer Simulation**
  - Scheduling
  - Regression Models
- **Queueing Systems**
  - Reliability
  - Multimodal Methods
- **Game Theory**
  - Probability Theory
  - Non-parametric Statistics
- **Decision Theory**
  - Estimation
  - Sample Survey
- **Robustness Theory**
  - Hypothesis Testing
  - Experimental Design

**Communication and Research Skills**

- **Statistical Methods**
  - Operational Research Methods
  - Data Science and Analytics
  - Credit Risk Scoring*

**Business and Risk Strategy**

- **Advanced Use of Statistical Packages**
  - Statistics and Operational Research
  - Supply Chain Modelling
  - Information Design
  - Web Application Development
  - Statistical Methods
  - Optimisation Methods

**Project Dissertation**

- **Advisory Panel**
  - Route Group
  - Lloyds Banking Group
  - Virgin Media
  - Virgin Media
  - Virgin Media

**Students will be eligible to include the duration of their studies towards professional accreditation of both the OR Society (CordRES status) and the Royal Statistical Society (GradStat status).**

By adopting an efficient modular approach to the programme, students will typically only need to be in the University for 24 weeks per year, with the remaining 38 weeks spent working with companies for 24 weeks each year. This also allows the student to apply the methods and skills acquired in the taught programme in a real-world setting, and will typically involve working with a company in a position at a senior level. Students who have placements will also gain substantial international experience. Of those placements, a student will be given a strong international role. Both Cardiff Schools of Mathematics and Computer Science are renowned for having an enormous wealth of links with many organisations from the community, Commercial Enterprises, Operational Research, Statisticians, Computer Scientists, and financial modellers in the UK and further afield. Many of our placements are used by employers and researchers in Data Science and Analytics professions.

Some of these placements will provide students with experience directly relevant to their CV. For example, students on several class sizes from a recognised university are in a number of subjects such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree. A good level of English is essential and written and oral (applicants whose first language is not English will normally require an IELTS score of 6.5).

Many of the placements provide students with experience directly relevant to their CV. For example, students on several class sizes from a recognised university are in a number of subjects such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree. A good level of English is essential and written and oral (applicants whose first language is not English will normally require an IELTS score of 6.5).

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a numerate subject such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.

- A good level of English language, both spoken and written. Students who apply whose first language is not English will normally require an IELTS score of 6.5.

- Students who have placements will also gain substantial international experience.

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a numerate subject such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.

- A good level of English language, both spoken and written. Students who apply whose first language is not English will normally require an IELTS score of 6.5.

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a numerate subject such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.}

**Programme Structure and Content MSc in Science and Analytics**

By adopting an efficient modular approach to the programme, students will typically only need to be in the University for 24 weeks per year, with the remaining 38 weeks spent working with companies for 24 weeks each year. This also allows the student to apply the methods and skills acquired in the taught programme in a real-world setting, and will typically involve working with a company in a position at a senior level. Students who have placements will also gain substantial international experience. Of those placements, a student will be given a strong international role. Both Cardiff Schools of Mathematics and Computer Science are renowned for having an enormous wealth of links with many organisations from the community, Commercial Enterprises, Operational Research, Statisticians, Computer Scientists, and financial modellers in the UK and further afield. Many of our placements are used by employers and researchers in Data Science and Analytics professions.

Some of these placements will provide students with experience directly relevant to their CV. For example, students on several class sizes from a recognised university are in a number of subjects such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree. A good level of English is essential and written and oral (applicants whose first language is not English will normally require an IELTS score of 6.5).

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a numerate subject such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.

- A good level of English language, both spoken and written. Students who apply whose first language is not English will normally require an IELTS score of 6.5.

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a numerate subject such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.**
Programme Structure and Content

MSc in Operational Research and Applied Statistics

Programme in Operational Research and Applied Statistics
Programme Structure and Content of both the OR Society (CandORS status) and the Royal Statistical Society (GradStat status).

• Project Dissertation
• Communication and Research Skills
• Options (Select 4 modules)

Applications are welcome from people with:

• A first degree in a related discipline (not necessarily Operational Research, Applied Statistics and Financial Risk) and who have an excellent record of academic achievement.

Students may then choose from a range of interesting and valued option modules from the list shown below.

Cardiff University is renowned for a high proportion of research-active academics. The group attracts significant research funding with many academic staff at the forefront of their research fields.

 Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including teaching through seminar packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Programming
- Operational Research
- Statistics
- Decision Theory
- Reliability Theory
- Computer Science
- Business and Risk Strategy
- Healthcare Modelling
- Supply Chain Modelling
- Time Series and Forecasting
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Mathematical Methods
- Business and Risk Strategy
- Risk Management
- Credit Risk Scoring

Students will be eligible to include the duration of their studies towards professional accreditation of both the OR Society (CandORS status) and the Royal Statistical Society (GradStat status).

Mathew Jones
Head of Risk
Decision Modelling –
National Pension’s

The financial industry is always on the lookout for talented graduates to provide the next generation of technical analysts. The MSc courses provided by Cardiff University support the development of highly skilled analysts with excellent problem solving and statistical skills, through a great addition to the appeal of a graduate OR to potential employers in the industry.

By adopting an efficient modular approach to the programme, you will only need to be in the University for lectures and coursework for an average of one week per term and per week for 24 weeks each year. You will usually complete the taught component of the programme over two years with a further year to complete the project dissertation.

Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including teaching through seminar packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Programming
- Operational Research
- Statistics
- Decision Theory
- Reliability Theory
- Computer Science
- Business and Risk Strategy
- Healthcare Modelling
- Supply Chain Modelling
- Time Series and Forecasting
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Mathematical Methods
- Business and Risk Strategy
- Risk Management
- Credit Risk Scoring

Students may then choose from a range of interesting and valued option modules from the list shown below.

Cardiff University is renowned for a high proportion of research-active academics. The group attracts significant research funding with many academic staff at the forefront of their research fields.

 Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including teaching through seminar packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Programming
- Operational Research
- Statistics
- Decision Theory
- Reliability Theory
- Computer Science
- Business and Risk Strategy
- Healthcare Modelling
- Supply Chain Modelling
- Time Series and Forecasting
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Mathematical Methods
- Business and Risk Strategy
- Risk Management
- Credit Risk Scoring

Students may then choose from a range of interesting and valued option modules from the list shown below.

Cardiff University is renowned for a high proportion of research-active academics. The group attracts significant research funding with many academic staff at the forefront of their research fields.

 Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including teaching through seminar packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Programming
- Operational Research
- Statistics
- Decision Theory
- Reliability Theory
- Computer Science
- Business and Risk Strategy
- Healthcare Modelling
- Supply Chain Modelling
- Time Series and Forecasting
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Mathematical Methods
- Business and Risk Strategy
- Risk Management
- Credit Risk Scoring

Students may then choose from a range of interesting and valued option modules from the list shown below.

Cardiff University is renowned for a high proportion of research-active academics. The group attracts significant research funding with many academic staff at the forefront of their research fields.

 Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including teaching through seminar packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Programming
- Operational Research
- Statistics
- Decision Theory
- Reliability Theory
- Computer Science
- Business and Risk Strategy
- Healthcare Modelling
- Supply Chain Modelling
- Time Series and Forecasting
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Mathematical Methods
- Business and Risk Strategy
- Risk Management
- Credit Risk Scoring

Students may then choose from a range of interesting and valued option modules from the list shown below.

Cardiff University is renowned for a high proportion of research-active academics. The group attracts significant research funding with many academic staff at the forefront of their research fields.
Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including courses in mathematical packages, spreadsheet modelling and computer programming skills. Topics include:

- **Optimisation**
  - Inventory Control
  - Regression Analysis

- **Computer Simulation**
  - Scheduling
  - Queuing Systems

- **Game Theory**
  - Probability Theory
  - Non-parametric Statistics

- **Decision Theory**
  - Sample Surveys

- **Reliability Theory**
  - Hypothesis Testing
  - Experimental Design

Students may then choose from a range of interesting and valued option modules from the list shown below.

**Module Details**

- **Operations Research**
- **Statistical Methods**
- **Management Science and Research Skills**
- **Computational Methods**
- **Projects**

Students will be eligible to include the duration of their studies towards professional accreditation shown below.

**Project Dissertation**

- Must be chosen by students on the MSc in Operational Research, Applied Statistics and Financial Risk

- Credit Risk Scoring
- Supply Chain Modelling
- Financial Maths and Actuarial Risk
- Business and Risk Strategy
- Healthcare Modelling
- Statistics and OR for Government
- Decision Modelling – Visualization

Applications are welcome from people with:

- A first degree in related disciplines. The MSc courses provided by Cardiff University support the graduates CV to potential employers in the industry.

**Who is Eligible and How to Apply**

For further details of the MSc programmes, information on scholarships and how to apply please visit: cardiff.ac.uk/mathematics and coursefinder.cf.ac.uk

By adopting an efficient modular approach the taught component of the programme will only need to be in the University for 24 weeks each year. You will usually complete the taught component of the programme over two years, with a further year to complete the project dissertation.

An important feature of the MSc programme is the opportunity for students to gain practical experience through a real-world setting, and will typically involve working with a company on a project of mutual importance. Some of these placements will be abroad given our strong international links.

Both Cardiff Schools of Mathematics and Computer Science have very strong industry links and have well established links with many organisations that employ Data Scientists, Operational Researchers, Statisticians, Computer Scientists, and Financial Modellers including:

- Deloitte
- British Airways
- Bank of Ireland
- Aviva
- NATS
- GE
- Ernst & Young
- Welsh Water
- Virgin Media
- Transport for London
- PWC
- Office for National Statistics

Cardiff University is recognised in international government and research rankings as one of Britain’s leading teaching and research universities. Fluctuated by Royal Charter in 1883, the University today combines impressive facilities with a dynamic approach to teaching and research with its proud heritage of service and achievement. The Operational Research and Statistics Mathematics within the Cardiff School of Mathematics has a considerable international reputation and expertise. The group attracts significant research funding with many academic staff at the forefront of their research fields.

- Decision Modelling –  Visualization
- Information Processing in Python
- Information Retrieval
- Communication and Information Design
- Distributed and Cloud Computing
- Time Series and Forecasting
- Supply Chain Modelling
- Statistics and OR for Government
- Credit Risk Scoring

Students may then choose from a range of interesting and valued option modules from the list shown below.

**Semester 1**

- Probability Theory
- Programming Skills
- Machine Learning
- Data Mining
- Information Processing in Python
- Information Retrieval
- Information Design
- Web and Social Computing
- Technical Knowledge and Understanding will be developed through a mixture of academic discipline, you will be taught a number of related software packages and programming skills that are used by employers and researchers in Data Science and Analytics professions.

- Statistics and Operational Research
- Decision Modelling – Visualization
- Information Processing in Python
- Information Retrieval
- Information Design
- Web and Social Computing
- Technical Knowledge and Understanding will be developed through a mixture of academic discipline, you will be taught a number of related software packages and programming skills that are used by employers and researchers in Data Science and Analytics professions.

**Semester 2**

- Operations Research
- Statistical Methods
- Management Science and Research Skills
- Computational Methods
- Projects

**Project Dissertation**

- Management and business skills will be developed through a mixture of academic lectures, key skill workshops, revised industrial presentations from experienced industrialists, and the summer project that is typically spent working with a company.

- Technical Knowledge and Understanding will be developed through a mixture of academic discipline, you will be taught a number of related software packages and programming skills that are used by employers and researchers in Data Science and Analytics professions.

- Decision Modelling – Visualization
- Information Processing in Python
- Information Retrieval
- Information Design
- Web and Social Computing
- Technical Knowledge and Understanding will be developed through a mixture of academic discipline, you will be taught a number of related software packages and programming skills that are used by employers and researchers in Data Science and Analytics professions.

- Operations Research
- Statistical Methods
- Management Science and Research Skills
- Computational Methods
- Projects

**Project Dissertation**

- Management and business skills will be developed through a mixture of academic lectures, key skill workshops, revised industrial presentations from experienced industrialists, and the summer project that is typically spent working with a company.
Both programmes cover the fundamental topics of Operational Research and Applied Statistics, including choice of appropriate software packages, spreadsheet modelling and computer programming skills. Topics include:

- Computer Simulation
- Optimization
- Decision Theory
- Game Theory
- Robust Theory
- Regression Systems
- Probability Theory
- Non-parametric Statistics

Students may then choose from a range of interesting and varied option modules from the list shown below.

### Programme Structure and Content

Both programmes are the same in their core components but allow for specialization in a specific field. Alongside developing the necessary knowledge for advanced scholarship in the specific field, you will be taught a number of related software packages and programming skills that are used by employers and researchers in Data Science and Analytics professions. Later in the programme, you will have the opportunity to undertake a project dissertation under supervision.

### Programme Structure and Content

By adopting an efficient modular approach to the taught component of the programme, students will typically only need to be in the University for lectures and workshops for the availability of up to one week per term and for the exam period of up to two weeks in the later part of each academic year to complete the programme dissertation.

An important feature of the MSc programme is the availability of a wide range of option modules. This allows the student to apply the methods and skills developed in taught programmes to a real-world setting, and will typically involve working in a company as a part time employee. Some of these placements will be abroad giving our strong international links.

### Programme Structure and Content

Both programmes have well established links with many organisations in banking, government, research, Operational Research, Statistics and Operational Research for Government, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.

- A good level of English language, both written and oral (applicants whose first language is not English will normally require a IELTS score of 6.5).
- Work experience in the relevant field (if any) and if appropriate work experience will be taken into account with particular emphasis given to experience directly relevant to the programmes of study.

We recognise that appropriate work experience is an important component in deciding on an applicant’s suitability, and so applicants are encouraged to provide the most relevant form of evidence to assist us in making a decision.

### Programme Structure and Content

Students may then choose from a range of interesting and varied option modules from the list shown below.

#### Project Dissertation

Students will be eligible to include the duration of their studies towards professional accreditation of both the OR Society (CandORS status) and the Royal Statistical Society (GradStat status). Upon successful completion of both the taught and dissertation components of the course, you will be eligible for Chartered Statistician (GradStat) status.

### Programme Structure and Content

Applications are welcome from people with:

- A first degree in a relevant discipline from a recognised university in a number of subjects such as Mathematics, Statistics, Computer Science, Operational Research, Management Science, Economics, Engineering, Physics or a suitable Science degree.

Cardiff University is recognised in independent government rankings as one of Britain’s leading teaching and research universities. Flanked by Royal Charter in 1883, the University today combines impressive facilities with a dynamic approach to teaching and research with its proud heritage of service and achievement. The Operational Research and Statistics Mathematics within the Cardiff School of Mathematics has a considerable international reputation and expertise. The group attracts significant research funding with many academic staff at the forefront of their research fields.

By completing this programme, students will be able to:

- Use statistical methods and techniques to solve problems in a variety of contexts.
- Use computational methods, programming and data analysis techniques to solve problems.
- Develop critical thinking skills and problem-solving techniques.
- Communicate their work effectively both orally and in writing.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.

### Programme Structure and Content

Cardiff University is a public research university in Cardiff, Wales. It was founded in 1883 as University College of South Wales and Monmouthshire and received university status in 1903. It is the second oldest university in Wales and the third oldest in the United Kingdom.

### Programme Structure and Content

Students interested in pursuing a career in statistics should contact the School of Mathematics for further information. The School of Mathematics has a strong research focus in both pure and applied mathematics, and interdisciplinary research at the interface of mathematics and other disciplines is encouraged. The School also has a strong commitment to teaching, offering a range of undergraduate and postgraduate courses.
MSc in Data Science and Analytics

The programme offers a suitable balance of: doing research and practical tasks to help me think logically and understand how to approach problems, case studies to equip me with the skills to solve a number of real-life problems, and the many techniques that have been learnt to formulate a model, helping solve problems quickly and efficiently. I now use these skills on a day-to-day basis to help my employer reduce costs and analyse the best way forward in capital expenditure programmes.

Bill Gates
Chief Data Scientist – Office of National Statistics

We are a large employer in this field at the forefront of the data revolution, we ethically understand what Cardiff University’s MSc licence, which can provide the vital analytical, statistical and computing skills that we look for when recruiting postgraduates.”

Data is increasingly cheap and ubiquitous, and is being collected on a massive scale. There is a significant and growing demand for professionals who can work efficiently and effectively with handling such complex and scalable data and to extract insights to help inform decision-making.

Tutored by experts in Statistics, Operational Research and Computer Science, this programme will help you develop both the theoretical understanding and practical experience of applying methods drawn from data science and analytics. This will equip you with a range of in-demand skills for extracting and handling ‘big data’, discovering and communicating meaningful patterns, and applying methods drawn from complex theory and practical tools to help make better decisions, and to become confident statistical analysts.

Delivered by experts in the fields of Operational Research and Statistics, the skills that you will learn are highly transferable for use within industry, business and the public sector.

You will study a variety of problem-solving techniques, allowing you to build and use mathematical and statistical models, alongside with deep case studies to communicate effectively to others.

Our programmes give you the opportunity for you to put the theory into practice, through doing real-world case studies.

Masters Programmes

Operational Research and Applied Statistics

Our innovative MSc programmes will equip you with the necessary analytical skills, methods and ways of thinking to tackle and analyse complex organisational problems, help make better decisions, and to become confident statistical analysts.

Delivered by experts in the fields of Operational Research and Statistics, the skills that you will learn are highly transferable for use within industry, business and the public sector.

You will study a variety of problem-solving techniques, allowing you to build and use mathematical and statistical models, alongside with deep case studies to communicate effectively to others.

Our programmes give you the opportunity for you to put the theory into practice, through doing real-world case studies.

MSc in Operational Research and Applied Statistics

MSc in Operational Research, Applied Statistics and Financial Risk

Organisations make better decisions.

The programmes will prepare you with essential techniques in Operational Research and Applied Statistics, and then you to select from optional courses in topics such as supply chain modelling, healthcare, and Statistics and Operational Risk for Government (delivered with input from the Office for National Statistics and Welsh Government).

The MSc with Financial Risk, which is a unique programme combination in the UK, is for those who wish to study in greater depth risk models, particularly applicable financial markets but also to other sectors. As well as studying the foundations in mathematical and statistical methods, allowing you to build and use mathematical and statistical models, alongside with deep case studies to communicate effectively to others.

Our programmes give you the opportunity for you to put the theory into practice, through doing real-world case studies.

MSc in Operational Research, Applied Statistics and Financial Risk

Cardiff: The City

Cardiff caters for all tastes, offering everything from the excitement of a vibrant city life to the peace and tranquillity of the nearby coast and countryside.

A city with both heritage and ambition, Cardiff has a distinctive character, a good quality of life, and a growing national and international reputation. As the capital city of Wales it is home to landmark buildings ranging from the ornate civic centre to the historic Cardiff Castle.

Amira Irshad, Graduate

I am using my statistical knowledge to model current job with the Welsh Government, where I am using my statistical knowledge to model social care improvement.

As a large employer in this field at the forefront of the data revolution, we ethically understand what Cardiff University’s MSc licence, which can provide the vital analytical, statistical and computing skills that we look for when recruiting postgraduates.”

As the capital city of Wales it is home to landmark buildings ranging from the ornate civic centre to the historic Cardiff Castle.