



# Post Graduate Programmes

[www.ucl.ac.uk/rdr/](http://www.ucl.ac.uk/rdr/)

 RDR

UCL Institute for Risk  
and Disaster Reduction



The Institute for Risk and Disaster Reduction (IRDR), leads multidisciplinary research, knowledge exchange and advanced teaching across UCL. We have global, national and local recognition, evidenced by international attendance at our annual Humanitarian Summit, our Annual Conference addressed by the UK Government's Chief Scientific Advisor, and our training of London Resilience's gold command. As a student, you will be encouraged to join our active seminar series, high-profile public discussion meetings and the networking events we host.

## Careers

Whether you wish to start a new career in risk and disaster reduction or you already have the experience we are here to support you. With an MSc or MRes from UCL IRDR, you will have excellent academic credibility coupled with practical and analytical skills.

We run an annual *Careers and Opportunities Forum* which offers expert and targeted advice, and hosts stalls from a range of employers and headhunters in the field of risk and disaster reduction. We provide *entrepreneurship training* for students interested in non-traditional careers in disaster preparation, response and humanitarian action.

*"My department and lecturers helped me make connections with people ... I also attended UCL Careers events that were helpful in terms of giving advice and guidance as well as establishing new contacts." (IRDR MSc student, 2015-2016 )*

### Some career destinations of recent IRDR graduates:

- Disaster Risk Management Consultant, World Bank
- Project Officer, Global Risk Forum, Davos
- Coastal Risk Management Officer, Environment Agency
- Project Officer, Cairo Local Government
- Field Delegate, Red Cross
- Global Engagement Fellow, Interpeace
- Resilience Technical Officer, International Medical Corps
- Project Officer, Rescue Global
- Emergency Information Management Specialist, Plan Nepal
- Business Continuity & Resilience Consultant, PwC
- Business Continuity Consultant, Arup
- Catastrophe Analyst, Barbican Insurance Group
- Analyst, RMS (Risk Management Solutions)
- Reinsurance Claims Management Executive AXA Global Re, Paris
- PhD Student, NERC London Doctoral Training Centre

Learn from world-class researchers and professionals delivering the programme through a combination of lectures, class discussions, problem-solving exercises, practicals, field trips, directed reading and practitioner-led real-time disaster scenario events. There is an emphasis on hands-on learning and tutorial-style dialogue between students and lecturers. Assessment takes place through individual and group oral presentations, written examinations, coursework exercises and essays, and a research project.

*Masters students practice planning a humanitarian response operation following a devastating storm. The scenario exercise is run by IRDR's NGO partner*



## Types of Programme

The main differences between the programme types are the total number of credits needed, the number of taught modules taken, and whether there is an independent research project.

### **Masters Programmes**

MSc and MRes students undertake the equivalent of a full year of study. All of our masters programmes include an independent research project.

MSc programmes are suitable for students who want to have a wide range of taught modules and do an independent research project constituting about one third of the student's time.

MRes programmes have the dissertation as the focus of the programme, with taught modules aimed to support their learning and development; the MRes programme is ideal for students wanting to complete a considerable piece of research, possibly as training for a research career.

### **Post Graduate Diploma and Certificate**

The PGDip and PGCert programmes comprise taught modules with no independent research project; these programmes are aimed at students who want to increase their knowledge with less of a time commitment than a masters. PGDip students take twice as many modules as PGCert students.

The disaster risk management industry needs professionalising. Academic study can underpin this, enabling you to apply evidence and research based theory to this sector. Through a multidisciplinary approach to risk and disaster reduction, you will learn to become a future leader driving policy change and innovation in order to preserve lives and sustain economies which could otherwise be destroyed or damaged by disaster. You will gain expertise in analysing complex challenges and providing sustainable solutions.

## Programme Themes



*Photo taken by Joanna Faure Walker*

*Amatrice, EEFIT mission following the 2016 Earthquake. IRDR students and staff research seismic risk and resilience in Italy and we appear on national and international media*

### Physical and Social Science of Natural and Anthropogenic Hazards

- What is known and unknown

- Current research and uncertainties

### Building Resilience

- What are the barriers to risk and disasters reduction and how do we overcome them?

- Develop a common language to communicate complex concepts in an accessible way

### Understanding Vulnerability

- From fragility curves describing damage to buildings to social vulnerability of individuals and society

### Quantifying Risk

- What is risk and how do we measure it?

- Components of risk: exposure, hazard, vulnerability

### Multidisciplinary Holistic Approaches

- Integrating scientific knowledge into disaster risk reduction research, policy and practice
- Communicating with stakeholders

### Managing Disasters

- How to apply plans to manage real emergencies

## Director: Dr Joanna Faure Walker

Availability: Full-time 1 year; Part-time 2 years; Flexible: up to 5 years.

MSc students undertake eight taught modules (15 credits each) and an independent research project (60 credits).

### 2 Compulsory Core Taught Modules

Integrating Science Into Risk and Disaster Reduction  
Emergency and Crisis Management

### 2 Compulsory Programme Specific Taught Modules

Natural and Anthropogenic Hazards and Vulnerability  
Emergency and Crisis Planning

### 2 Compulsory Taught Skills Modules

Data Analysis and Interpretation  
Practice and Appraisal of Research

### 2 Optional Taught Modules

A choice of modules within the following subjects:

Risk Analysis for Disaster Science

Decision and Risk (Statistics)\*

Post Disaster Recovery\*

Risk, Power, and Uncertainty\*

Risk and Contingency Planning\*

Disaster Risk Reduction in Cities\*

Gender, Disaster and Conflict

Perspectives on Terrorism\*

Adapting Cities To Climate  
Change in the Global South \*

Catastrophe Risk Modelling

The Variable Sun: Space Weather and You

Digital Public Health: Epidemics and Emergencies

Business Continuity Management and Organisational Resilience

Conflict, Humanitarianism, and Disaster Risk Reduction

### Dissertation Project

Students undertake an independent research project.

Note: All optional modules are subject to availability and particular modules may not be possible in any given year. Non-IRDR optional modules are marked with an asterisk (\*).



*Thames Barrier visit: students learn about urban flood risk*

*“For my MSc research thesis, I [worked] with a non-profit organisation (London First) and the London Fire Brigade on a real project ...win-win as I get work experience, networking opportunities and support from them ... and I support their project with scientific evidence.” (IRDR MSc student, 2015-2016)*



The global challenge of understanding risk, increasing resilience and reducing exposure to hazards has generated demand for a new type of scientist in government, business and NGOs, who can work across boundaries. In a science-led programme, you will learn how to assess and quantify risk, reduce disaster risks and manage emergencies for natural and anthropogenic hazards, humanitarian and health crises, conflict and climate change.

## Programme Themes



*Student at UCL IRDR preparing rock samples for volcanic simulation experiments*

*My MSc has enabled me to gain an understanding of risk, learn techniques and how to apply scientific tools in real situations. (IRDR MSc student, 2015-2016)*

### Science of Earth and Space Hazards

Analyze different hazard risks: seismicity, space weather, epidemics, conflict and climate

Scenarios and case studies drawn globally providing breadth of experience

### Statistical and Modelling Tools

Statistical treatment of risk

Bring together data and theory

### Understanding Vulnerability

From fragility curves describing damage of buildings to social vulnerability of individuals and society

### Quantifying Risk

What is risk and how do we measure it?

Components of risk: exposure, hazard, vulnerability

### Multidisciplinary Holistic Approaches

Integrating scientific knowledge into disaster risk reduction research, policy and practice

Communicating with stakeholders

### Managing Disasters

How to apply plans to manage real emergencies

## **Director: Professor Peter Sammonds**

Availability: Full-time 1 year; Part-time 2 years

MSc students undertake eight taught modules (15 credits each) and an independent research project (60 credits).

### 2 Compulsory Core Taught Modules

Integrating Science Into Risk and Disaster Reduction  
Emergency and Crisis Management

### 1 Compulsory Programme Specific Core Module

Risk Analysis for Disaster Science

### 2 Compulsory Taught Skills Modules

Data Analysis and Interpretation  
Practice and Appraisal of Research

### 3 Optional Taught Modules

A choice of modules within the following subjects:

Catastrophe Risk Modelling  
Digital Public Health: Epidemics and Emergencies  
Decision and Risk (Statistics)\*  
Gender, Disaster and Conflict  
Conflict, Humanitarianism, and Disaster Risk Reduction  
Business Continuity Management and Organisational Resilience  
The Variable Sun: Space Weather and You  
Emergency and Crisis Planning  
Climate Risks to Hydro-Ecological Systems\*  
Seismic Risk Assessment\*  
Natural and Anthropogenic Hazards and Vulnerability



*Fukushima Nuclear Power Plant, Japan, following the 2011 Earthquake and Tsunami. IRDR has international research links across many disciplines including earthquake geology, health, and transitional housing*

### Dissertation Project

Students undertake an independent research project.

Note: All optional modules are subject to availability and particular modules may not be possible in any given year. Non-IRDR optional modules are marked with an asterisk (\*).

Natural and anthropogenic hazards, humanitarian and health crises, conflict, and climate change create challenges for businesses and demand managerial skills to respond. This science-led programme fills a business and organizational need for graduates with management skills and innovative approaches to increase resilience. Students in the pathway are able to select up to 2 optional modules from the **UCL School of Management**.

## Programme Themes



*Students at UCL IRDR visiting the Met Office during the South England field trip.*

### Disaster Management

Managerial skills to face disasters and to reduce risks

Entrepreneurial mind and innovative approaches to build resilience

Business continuity planning to manage real emergencies

### Science of Earth and Space Hazards

Analyze different hazard risks: seismicity, space weather, epidemics, conflict and climate

Scenarios and case studies drawn globally to provide breadth of experience

### Quantifying Risk

Components of risk: exposure, hazard, vulnerability

Understanding Vulnerability

Statistical and Modelling Tools

### Multidisciplinary Holistic Approaches

Integrating scientific knowledge into disaster risk reduction research, policy and practice

Communicating with stakeholders

### Managing Disasters

How to apply plans to manage real emergencies



## **Director: Professor Peter Sammonds**

Availability: Full-time 1 year; Part-time 2 years

MSc students undertake eight taught modules (15 credits each) and an independent research project (60 credits).

### **2 Compulsory Core Taught Modules**

- Integrating Science Into Risk and Disaster Reduction
- Emergency and Crisis Management

### **1 Compulsory Programme Specific Core Module**

- Risk Analysis for Disaster Science

### **2 Compulsory Taught Skills Modules**

- Data Analysis and Interpretation
- Practice and Appraisal of Research

### **3 Optional Taught Modules**

A choice of modules within the following subjects including modules from **UCL School of Management**:

- Catastrophe Risk Modelling
- Digital Public Health: Epidemics and Emergencies
- Decision and Risk (Statistics)\*
- Conflict, Humanitarianism, and Disaster Risk Reduction
- Emergency and Crisis Planning
- Gender, Disaster and Conflict
- The Variable Sun: Space Weather and You
- Natural and Anthropogenic Hazards and Vulnerability
- Business Continuity Management and Organisational Resilience

### **UCL School of Management optional Modules:**

- Social Network Analysis\*
- Influence and Negotiations\*
- Decision and Risk Analysis\*
- Mastering Entrepreneurship\*
- Project Management\*
- Entrepreneurship: Theory and Practice\*

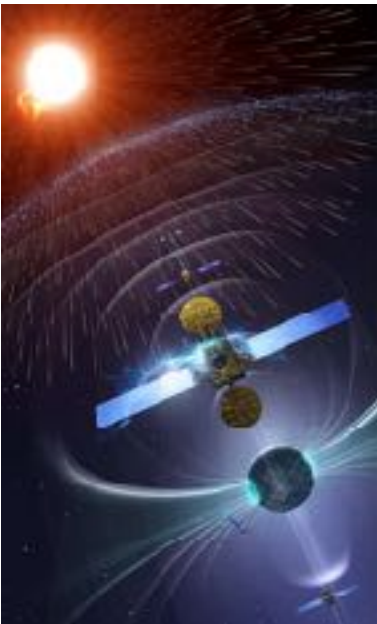
### **Dissertation Project**

Students undertake an independent research project.

Note: All optional modules are subject to availability and particular modules may not be possible in any given year. Non-IRDR optional modules are marked with an asterisk (\*).

In an increasingly technological and globally connected world, risks to space-based communications systems and critical infrastructure are emerging threats to national security and businesses. In a programme that unites emergency response, disaster risk reduction and space technology, you will learn about satellite technology, mission design, hazards and vulnerabilities unique to outer space, disaster response, and the monitoring of hazards on Earth from outer space.

## Programme Themes



*Artists impression of space weather impact on satellites, (ESA - Pierre Carril)*

### Hazards of Outer Space

- Space weather, radiation, debris
- Emerging risks and the future of disaster monitoring

### Satellite Design and Operations in Space

- Learn how to design and operate a satellite from the largest university space science department in the UK

### Understanding Vulnerability

- From fragility curves describing damage to buildings to social vulnerability of individuals and society

### Quantifying Risk

- What is risk and how to we measure it?
- Components of risk: exposure, hazard, vulnerability

### Multidisciplinary Holistic Approaches

- Integrating scientific knowledge into disaster risk reduction research, policy and practice
- Communicating with stakeholders

### Managing Disasters

- How to apply plans to manage real emergencies

## **Director: Dr Robert Wicks**

Availability: Full-time 1 year; Part-time 2 years

MSc students undertake eight taught modules (15 credits each) and an independent research project (60 credits).

### **2 Compulsory Core Taught Modules**

Integrating Science Into Risk and Disaster Reduction

Emergency and Crisis Management

### **3 Compulsory Programme Specific Taught Modules**

Space Science, Environment and Satellite Missions

The Variable Sun: Space Weather and You

Space Systems Engineering

### **1 Compulsory Taught Skills Module**

Practice and Appraisal of Research

### **2 Optional Taught Modules**

A choice of modules within the following subjects:

Data Analysis and Interpretation

Emergency and Crisis Planning

Catastrophe Risk Modelling

Global Monitoring and Security\*

Decision and Risk (Statistics)\*

Gender, Disaster and Conflict

Mechanical Design of Spacecraft

Risk Analysis for Disaster Science

Space-Based Communication Systems

Space Instrumentation and Applications

Spacecraft Design - Electronic Sub-Systems

Principles and Practice of Remote Sensing\*

Digital Public Health: Epidemics and Emergencies

Business Continuity Management and Organisational Resilience

Natural and Anthropogenic Hazards and Vulnerability

### **Dissertation Project**

Students undertake an independent research project.



*Student & Professor use the MSSL ground station to communicate with CubeSats*

Note: All optional modules are subject to availability and particular modules may not be possible in any given year. Non-IRDR optional modules are marked with an asterisk (\*).



*Cambridge floods, 2001: In a field trip to Cambridge students assess flood hazard and vulnerability and engage with local residents and stakeholders regarding flood disasters, comparing then and now.*

Evidence-based theory developed through detailed academic studies can drive effective sustainable change in practice and policy to increase resilience to disasters. In addition to the foundational principles of risk and disaster reduction, you will gain expertise in research techniques and knowledge about current practices and problems. Combining a

## **Director: Professor David Alexander**

Availability: Full-time 1 year; Part-time 2 years

MRes students undertake five taught modules (15 credits each) and a substantial independent research project (105 credits).

### **2 Compulsory Core Taught Modules**

Integrating Science Into Risk and Disaster Reduction

Emergency and Crisis Management

### **2 Compulsory Taught Skills Modules**

Data Analysis and Interpretation

Practice and Appraisal of Research

### **1 Optional Taught Modules**

A choice of the following modules:

Natural and Anthropogenic Hazards and Vulnerability

Emergency and Crisis Planning

Conflict, Humanitarianism and Disaster Risk Reduction

The Variable Sun: Space Weather and You

Catastrophe Risk Modelling

Risk Analysis for Disaster Science

Gender, Disaster and Conflict

Business Continuity Management and Organisational Resilience

Digital Public Health: Epidemics and Emergencies

### **Dissertation Project**

Students undertake a substantial independent research project, which culminates in an independent report and presentation.

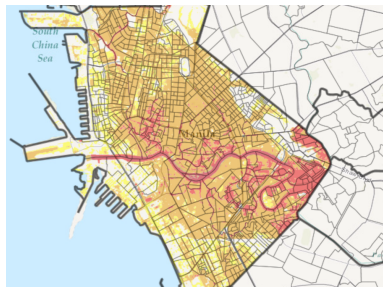
Note: All optional modules are subject to availability and particular modules may not be possible in any given year.

**The dissertation project** comprises 1/3 of this course. Supervisors and resources are available for projects in a wide range of risk, disaster and resilience topics. This project culminates in a research report and poster. Here are selected few independent research project topics done by Masters graduates:

- Business Community Resilience Enablers To Inform the Development
- Silos, Strategy & Achieving Organisational Resilience
- A Case Study of Safer Schools in Sichuan, China: Perceptions and Perspectives of Students Regarding Earthquakes
- A Financial Risk Assessment of Seismic Hazard in Nepal: the Foundation of an Insurance Solution To Reduce Vulnerability
- Risks in Wartime Disasters - Can Insurance Models Keep Pace With the Changing Maritime Environment?
- Simplified Methods for Probabilistic Flood Risk Assessment in Manila, Philippines
- Comparative Study of Urban Search and Rescue National Accreditation Process in the Americas' Region
- High Density Fine Particles (PM2.5) in South Korea : From the Perspective of a Major Human-Made Disaster
- Arctic Emergency Prevention, Preparedness & Response
- Suitability of the Early Warning Systems and Temporary Housing for the Elderly Population for the 2011 Great East Japan Earthquake and Tsunami



*The totally ruined Maoba Middle school*



*Flood map of the City of Manila*



## PGDip Risk, Disaster & Resilience

Availability: Full-time 1 year; Part-time 2 years

PGDip students undertake eight taught modules (15 credits each). These modules are the same as the MSc Risk, Disaster and Resilience but without the independent project.



*Temporary housing in the Philippines (left), Italy (middle) and Japan (right) following 2013 Typhoon Yolanda, 2009 L'Aquila Earthquake and the 2011 Great East Japan Earthquake and Tsunami, respectively*

## PGCert Risk & Disaster Reduction

Availability: Part-time 1 year

PGCert students undertake four taught modules (15 credits each). Students select four IRDR taught modules. The programme may be completed as a stand-alone PGCert, or it may be used as training towards subsequent completion of a PGDip or Masters.



*Thames Barrier field trip - masters students learn about London flood risk*



Research in the IRDR aspires to be cross-disciplinary, international and have significant societal impact. Research students contribute to the intellectual life of the IRDR and actively engage with UCL as a community of scholars.

## Types of Studentship

### Research Council funded PhD studentships

UCL IRDR is part of two UK Research Council Doctoral Training Partnerships (DTPs). Application deadlines for September entry typically open up to a year beforehand and close in January or February of the year the PhD starts. Studentships on these DTPs provide full fees and living expenses for up to 4 years for UK and EU students.

- London NERC (Natural Environment Research Council) DTP
- UCL, Bloomsbury and East London ESRC (Economic and Social Research Council) DTP

### Individually funded PhD studentships

### External scholarships and self-funded PhD study

If you are interested in PhD study at UCL IRDR, we recommend that you find out more about our research, academic staff, and current PhD students from our website and our annual report, or meet us at one of our events.

Applicants should identify a supervisor with suitable expertise to supervise their PhD and make contact with them before submitting a formal application to study for a PhD in UCL IRDR.

## IRDR Programmes:

Risk, Disaster and Resilience  
MSc

Risk and Disaster Science  
MSc

Risk and Disaster Science  
MSc Management Pathway

Space Risks and Disaster  
Reduction MSc

Risk and Disaster Reduction  
MRes

Risk and Disaster Reduction  
PhD

Postgraduate Diploma  
Postgraduate Certificate

## Admissions Contact

Dr Rosanna Smith  
Phone: +44 (0)20 7679  
3157  
Email: [irdr-  
enquiries@ucl.ac.uk](mailto:irdr-enquiries@ucl.ac.uk)

## Postal address

Institute for Risk and  
Disaster Reduction  
University College London  
Gower Street  
London WC1E 6BT  
United Kingdom

## Location

Main Campus, South Wing  
(2nd floor)  
Web: [https://  
www.ucl.ac.uk/rdr](https://www.ucl.ac.uk/rdr)

## Why UCL?

At UCL we are proud of our pioneering history, our distinguished present and our exciting future. UCL is a great place to be a student.

**World-class:** UCL is one of the world's leading universities, regularly featuring in the top 10 in global rankings.

**Cutting-edge:** Our new programmes include the latest discoveries and developments – so students would be on the cutting-edge.

**Innovation:** We are London's Global University and London's leading multidisciplinary university

**Diversity:** UCL has approximately 11,000 staff and 38,000 students. UCL has an international and diverse student body including 20,000 postgraduates and more than 15,000 non-UK students.

**Location:** We are based in the heart of London, one of the world's great cosmopolitan cities. It is an international hub for global finance and risk management, international NGOs, and engineering and development consultancies. The IRDR nurtures networks across London, and beyond.

## How to apply

Please visit <https://www.ucl.ac.uk/rdr> to apply online.

**Entry requirements:** Normally a minimum of an upper second-class UK Bachelor's degree in a relevant discipline or an overseas qualification of an equivalent standard.

