UNIVERSITY OF
LIVERPOOL

DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

we are the original redbrick

The University of Liverpool works with partner, Kaplan Higher Education Hong Kong, to process applications and admissions.

DATA SCIENCE AND
ARTIFICIAL INTELLIGENCE

Programme overview

Study mode: Online and part-time

Qualification: MSc / PG Dip / PG Cert Data Science and Artificial Intelligence

Indicative programme duration: 30 months / 20 months / 10 months

Entry requirements: Applicants should possess either:

- A degree in any subject equivalent to a UK Bachelor's degree of 2:2 or above; or

- At least two years' work experience, ideally of a technical nature, comparable with a Bachelor's degree

All applicants must have reached a minimum required standard of English language, and are required to provide evidence of this.

Teaching and assessment

The programme is delivered using the latest and most innovative online teaching techniques and includes a range of interesting and thought-provoking activities and exercises. Core information is developed by subject-leading experts in the field and closely aligned with both industry and academic best practice, underpinned by rigorous theoretical and relevant topics, examples and cases. Leading-edge materials are supported by specially trained tutors, who are not only professionals in the discipline, but who have an exceptional knowledge of supporting online students. Teaching activities consist of specially designed lecturecasts, carefully curated reading lists, and asynchronous discussions to enhance peer-to-peer learning opportunities.

Assessment is by coursework only – there are no examinations. Assessments align with the University of Liverpool commitment to have relevant, authentic and varied activities and are designed to lead directly to enhanced professional and personal objectives as well as being appropriate to the academic discipline.

*The indicative study duration is a guide to how long your course will take to complete. The actual duration may vary depending on study options chosen and module availability.

DATA SCIENCE AND
ARTIFICIAL INTELLIGENCE

What will I study?

This programme consists of the following modules. You are required to complete 180 credits to achieve a full Master of Science, 120 credits to achieve the postgraduate diploma (PG Dip), and 60 to achieve the postgraduate certificate (PG Cert).

	MSc	PGDip	PGCert
Global Trends in Computer Science (15 credits)	*	*	*
Mathematics and Statistics for Data Science (15 credits)	*	*	*
Software Development in Practice (15 credits)	*	*	*
Databases and Information Systems (15 credits)	*	*	*
Choose three elective module from (15 credits): Reasoning and Intelligent Systems* Machine Learning in Practice* Multi-Agent Systems* Robotics* Deep Learning* Natural language Processing and Understanding* Data Visualisation and Warehousing Cloud Computing Networks and Web Technology	* * *	* * *	
Research Methods in Computer Science (15 credits)	*	*	
Computer Science Capstone Project (60 credits)	*		

*Note - Two out of the three electives must be selected out of Reasoning and Intelligent Systems, Machine Learning in Practice, Multi-Agent Systems, Robotics, Deep Learning and Natural Language Processing and Understanding.

PROGRAMME STRUCTURE

GLOBAL TRENDS IN COMPUTER SCIENCE

Module aims

This module aims to:

- Familiarise students with the online classroom environment and allow them to explore current practice in computer science and information technology by sharing their global perspectives and experiences in discussion forums.

- Provide a comprehensive and holistic introduction to current trends in computer science, such as enterprise systems management, data protection and big data analytics, cyber security, pervasive computing, sustainable technology and risk management.

- Highlight the global, integrative and collaborative nature of the information technology industry, whilst allowing students to explore the relevance and impact of their unique regional contexts through critical discussion and group work.

- Allow students to explore and critically debate the use of information technology in an enterprise setting, the best way to make decisions regarding technology, and the management and administration needs of an organisation.

Learning outcomes

Students will be able to:

- Contribute to an academic community via the use of an online classroom and discussion forum, whilst demonstrating a commitment to lifelong learning, academic integrity and an understanding of the academic writing style.

- Produce an artefact that involves searching for, assimilating and analysing relevant scholarly resources, reflecting a range of viewpoints with original thought and commentary, and demonstrating digital fluency with search tools and presentation software.

- Demonstrate a critical understanding of current trends in computer science, and an appreciation of how information technology can be used to support business processes and add value to global enterprises.

- Articulate the legal, social, ethical and professional issues related to developing and using information systems and modern technology solutions, demonstrate

professionalism, and follow relevant professional codes of practice.

Syllabus

- Trends in computer science
- Information technology
- Data and risk management
- Cyber security
- Green computing
- Internet of things and smart cities
- Big data analytics
- Real-time, high integrity and embedded systems

Learning and teaching methods

The mode of delivery is by online learning, facilitated by a Virtual Learning Environment (VLE). This mode of study enables students to pursue modules via home study while continuing employment. Module delivery involves the establishment of a virtual classroom in which a relatively small group of students (usually 10-25) work under the direction of a faculty member. Module delivery proceeds via a series of eight one-week online sessions, each of which comprises an online lecture, supported by other eLearning activities, posted electronically to a public folder in the virtual classroom. The eLearning activities will include lecture casts, live seminar sessions, self-assessment activities, reading materials and other multimedia resources. Communication within the virtual classroom is asynchronous, preserving the requirement that students are able to pursue the course in their own time, within the weekly time-frame of each seminar. An important element of the module provision is active learning through collaborative, cohort-based, learning using discussion forum where the students engage in assessed discussions facilitated by the faculty member responsible for the module. This in turn encourages both confidence and global citizenship (given the international nature of the online student body).

MPH / PG Dip / PG Cert

Module code	CSCK544	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

MATHS AND STATISTICS FOR DATA SCIENCE AND AI

Module aims

This module aims to:

- Provide students with a systematic understanding of the key mathematical and statistical concepts and techniques underpinning established mechanisms of Data Science and AI.

- Provide students with sufficient mathematical and statistical knowledge to understand the operation and deployment of key tools and techniques of Data Science and AI.

- Provide students with an appropriate level of knowledge to able to interpret the results generated when using the techniques of Data Science and AI.

Learning outcomes

Students will be able to:

- Develop a systematic understanding of basic mathematical principles and methods of interest to Data Science and AI.

- Develop a critical awareness of basic and more specialised concepts in probability theory and statistics relevant to Data Science and AI.

- Undertake software projects in the domain of Data Science and AI.

- Communicate the outcomes of experimental work in the domain of Data Science and AI.

Syllabus

- Differential Calculus

- Linear Algebra

- Probability Theory

- Statistics

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK541	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

SOFTWARE DEVELOPMENT IN PRACTICE

Module aims

This module aims to:

- Provide students with a comprehensive understanding of the theory and practice of modern software development.

- Provide students with hands-on experience of a current programming language.

- Provide students with a critical insight into the processes of interpreting and translating software procurer requirements into software realisation.

- Provide a systematic overview into the process of evaluating and testing software systems.

- Develop an appreciation of the legal, social, ethical and professional considerations pertinent to software development, and the risk factors involved.

Learning outcomes

Students will be able to:

- Develop a deep and systematic understanding of the process of modern software development from end user requirements to software delivery.

- Develop a systematic knowledge of the theory underpinning modern programming techniques and the practical application of these techniques.

- Develop a comprehensive insight into the process and practice of evaluating software implementations.

- Develop a deep and systematic understanding of the risk factors pertaining to software development, and the associated legal, ethical, social and professional issues to be taken into consideration.

Syllabus

- Software Engineering Principles

- Data and Operators

- Control Structures and Recursion

- Data structures

- Graphical user interfaces

- Files, streams and I/O techniques

- Advanced Data Structures

- Management of the Software Development Enterprise

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK542	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

DATABASES AND INFORMATION SYSTEMS

Module aims

This module aims to:

- Provide a critical understanding of the design and realisation of database systems.
- Provide in-depth understanding of operation and usage of databases systems.
- Provide a comprehensive understanding of the administration and maintenance of database systems.
- Provide comprehensive insight into a range of database paradigms.

Learning outcomes

Students will be able to:

- Develop a deep and critical insight into database systems and computer information systems.
- Develop a comprehensive ability to implement a functioning database using current tools and structures, and employing current design practices.
- Demonstrate a critical understanding of database querying via analysis of results.
- Integrate appropriate security and backup in planning database maintenance and administration.

Syllabus

- Evolution and Fundamentals of Database Systems
- The Relational Model
- Analysis and Design of Database Systems
- Transaction Management
- Query Languages
- Database Connectivity
- Web Technology and DBs
- Alternative Database Paradigms

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK502	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

REASONING AND INTELLIGENT SYSTEMS

Module aims

This module aims to:

- Provide students with a comprehensive understanding of the domain of reasoning and intelligent systems.

- Enable students to evaluate modern techniques of artificial intelligence and reasoning in both the public and the private sector contexts.

- Provide students with the knowledge and skills required to develop and deploy the tools and techniques of intelligent systems to solve real world problems.

Learning outcomes

Students will be able to:

- Analyse and evaluate intelligent systems' techniques.

- Demonstrate an understanding of the differences between intelligent system applications and conventional computer applications.

- Deploy critically appropriate software tools and skills for the design and implementation of intelligent systems.

- Demonstrate an in-depth understanding of the practical application of the principles of intelligent systems.

- Analyse intelligent system problems and formulate appropriate solutions.

Syllabus

- Introduction to intelligent systems

- Rule-based expert systems

- Reasoning under uncertainty

- Evolutionary computation algorithms

- Fuzzy expert systems

- Inductive reasoning

- Temporal and spatial reasoning

- Intelligent systems applications

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK503	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

MACHINE LEARNING IN PRACTICE

Module aims

This module aims to:

- Provide an in-depth understanding of established techniques of machine learning, its real-world application and the legal contexts in which machine learning operates.

- Provide students with comprehensive knowledge of the nature of data and the mechanism that may be used to pre-process data to support machine learning activities.

- Establish a comprehensive and practical awareness of the techniques and metrics used to evaluate machine learning algorithms.

- Furnish students with an in-depth and critical knowledge of a range of established approaches to machine learning, including their statistical and mathematical underpinning.

- Provide a wide-ranging practical knowledge of an established machine learning workbench.

Learning outcomes

Students will be able to:

- Demonstrate a well-founded and comprehensive knowledge of the operation of a widely used machine learning workbench.

- Demonstrate a comprehensive and systematic understanding of the legal frameworks in which machine learning operates.

- Deploy effectively a variety of tools and techniques within the remit of machine learning.

- Demonstrate a deep and systematic understanding of the limitations of a range of machine learning techniques and how the effectiveness of individual techniques can be analysed.

Syllabus

- Machine learning fundamentals

- Data preprocessing

- Dimensionality reduction

- Linear regression

- Classification

- Decision trees

- Association rule mining

- Clustering

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK504	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

MULTI-AGENT SYSTEMS

Module aims

This module aims to:

- Provide students with a thorough and comprehensive understanding of the computer science domain of multi-agent systems.

- Enable students to critically evaluate current theories and methods in multi-agent system design and their application to a wide variety of contexts.

- Equip students with technical knowledge and skills to develop and deploy multi-agent system solutions to solve real world problems.

Learning outcomes

Students will be able to:

- Demonstrate an in-depth understanding of the area of multi-agent systems, their theoretical underpinning and practical applications.

- Demonstrate a comprehensive understanding of the difference between the multi-agent paradigm and the more conventional approaches to complex systems design.

- Analyse real world problems for which a multi-agent system approach is appropriate, and formulate a solution.

- Critically evaluate and deploy software tools and skills for the implementation of multi-agent systems.

Syllabus

- Agents, objects and expert systems

- Reasoning, reactive, layered and hybrid agents

- Methods for designing agent-oriented analysis

- Speech, languages (KQML, FIPA) for agent communication

- Ontologies and description logistics for languages, i.e. XML

- Coalitions, co-operative and adversarial interaction in multi-agent decision making

- Voting, auctions, argumentation and negotiating and bargaining

- Criteria and exemplars for multi-agent system solutions

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK505	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

ROBOTICS

Module aims

This module aims to:

- Introduce students to the key issues surrounding the development of robots and robot control.

- Provide students with a deep and systematic understanding of a wide range of current topics in the field of robot control.

- Allow students to experiment with techniques central to the operation of robots using a simulated environment.

- Enable students to implement robotic control solutions to commercial challenges.

- Provide students with a deep understanding of the legal and ethical frameworks in which robots operate.

Learning outcomes

Students will be able to:

- Demonstrate a deep and systematic understanding of robot systems and their application.

- Demonstrate a critical and comprehensive insight into a range of topics central to the field of robotics.

- Implement robot solutions using a range of tools and techniques.

- Demonstrate a comprehensive awareness of the legal and ethical setting in which robotic systems operate.

Syllabus

- Introduction to robotics

- Behaviour based robots

- Belief systems and Bayesian filters

- Sensors

- Mobile robots

- Maps and mapping

- Localisation

- Robot Arms

Learning and teaching methods

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MPH / PG Dip / PG Cert

DEEP LEARNING

Module aims

This module aims to:

- Provide a theoretical understanding of modern deep learning.

- Provide a critical understanding of the practical application of deep learning in the modern workplace.

- Provide a deep insight into the usage of current deep learning libraries.

Learning outcomes

Students will be able to:

- Demonstrate a comprehensive understanding of the nature of deep learning in the context of modern computing capabilities.

- Demonstrate a systematic understanding of mathematical foundations and algorithmic principles of deep learning.

- Demonstrate a critical understanding of the process of deploying deep learning systems and the limitations involved.

- Apply the techniques of deep learning using current deep learning libraries.

Syllabus

- Introduction to deep learning

- Cloud computing

- Neural networks (NN)

- Regularization and optimizations

- Convolutional neural networks (CNNs)

- Recurrent neural networks (RNNs)

- Generative adversarial networks (GANs)

- Deep reinforcement learning

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK507	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

NATURAL LANGUAGE PROCESSING AND UNDERSTANDING

Module aims

This module aims to:

- Provide students with a deep and systematic understanding of the theoretical underpinning supporting the domain of natural language processing.

- Provide students with a comprehensive understanding of the tools and techniques of natural language processing and understanding and the ability to deploy such tools and techniques.

- Provide students with the ability to apply the principles, methods and tools of natural language processing and understanding to provide solutions to business problems.

Learning outcomes

Students will be able to:

- Demonstrate a deep and systematic understanding of the nature of Natural Language Processing (NLP) in the context of modern commercial settings.

- Demonstrate a critical understanding of the theory underpinning the practical application of NLP.

- Demonstrate a comprehensive and wide-ranging understanding of the tools and techniques employed in the domain of NLP and an ability to apply those tools.

- Demonstrate a comprehensive understanding of the nature of Chat Bots in the context of NLP and an ability to create simple but effective Chat Bot applications.

Syllabus

- The natural language processing landscape
- Text and sentence representation
- Sentiment analysis
- Named-entity recognition
- Sequence to sequence models
- Conversational user interfaces
- Chat bots
- Ethical considerations

Learning and teaching methods

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MPH / PG Dip / PG Cert

DATA VISUALISATION AND WAREHOUSING

Module aims

This module aims to:

- Provide a comprehensive understanding of data warehousing concepts and techniques.

- Provide an opportunity for students to create a data warehouse using open-source technologies and open-source public data sets.

- Provide a comprehensive understanding of why data visualisation is important and how this communicates insights better than traditional reporting techniques.

- Provide students with an opportunity to create data visualisations and combine such visualisations into a single dashboard to tell a "data story"

Learning outcomes

Students will be able to:

- An in-depth knowledge of data warehousing concepts and techniques.

- A comprehensive and critical understanding of the process of creating effective data warehousing solutions

- A systematic understanding of data visualisation techniques and best practice

- Hands-on experience of building a data visualisation dashboard using a state-of-the-art visualisation system and how such visualisations may be used to support decision making

Syllabus

- Review of the rational for, and benefits of, data warehousing

- Design of relational databases

- Data accuracy and data cleansing; defining rules for data warehousing

- Loading data into a data warehouse and ensuring that relevant business case objectives are met

- Benefits of visualisation and data storytelling

- The process of building visualisations to answer common business questions

- Combining visualisations into a single dashboard to "tell a story"

- Expanding and building on top of existing insights

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK514	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

CLOUD COMPUTING

Module aims

This module aims to:

- Provide students with the opportunity to investigate cloud architectures and foundations so that they obtain a comprehensive understanding of the process of building cloud-based infrastructure services and applications.

- Provide a comprehensive and systematic understanding of cloud architecture models.

- Provide a critical and wide-ranging understanding of cloud industry standardisation, middleware platforms and cloud provider platforms.

Learning outcomes

Students will be able to:

- A comprehensive ability to explain key concepts and major application areas in the context of cloud computing.

- An ability to analyse and critically compare cloud computing solutions.

- A deep and systematic understanding of the mechanisms that can be used to realise cloud computing solutions to IT problems.

Syllabus

- Cloud Computing Foundation

- Cloud Architectures and Cloud Platforms

- Cloud Infrastructure as a Service (IaaS)

- Cloud Platform as a Service (PaaS)

- Cloud Software as a Service (SaaS) and application clouds.

- Cloud Security, data protection and privacy, access control and identity management

- Cloud construction, cloud interoperability, migration enterprise infrastructure to clouds

- Cloud infrastructure management, system/ service compliance and assurance

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK543	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

NETWORKS AND WEB TECHNOLOGY

Module aims

This module aims to:

- Develop a deep and systematic knowledge of the use of Web technologies to support business needs and objectives.

- Provide in-depth and critical understanding of current tools and techniques that support Web technologies.

- Develop high-level skills in development and maintenance of appropriate web based systems.

Learning outcomes

Students will be able to:

- Develop a deep and systematic understanding of the tools and techniques used to build Web applications.

- Conduct in-depth analysis of the legal, social, ethical and professional issues relating to the practical deployment of Web technologies.

- Create both static and dynamic web based systems, using current tools and techniques, to support business needs and goals.

- Critically analyse and evaluate Web applications in respect of usability and accessibility.

Syllabus

- Web Design

- Distributed Systems and Internet Protocols

- Markup Languages

- Dynamic Web Programming

- Server and Client Side Scripting

- Scripting Languages

- The Semantic Web

- Advanced Web Technologies

Learning and teaching methods

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MPH / PG Dip / PG Cert

Module code	CSCK508	NQF level	Level 7
Credit value	15 credits	Module duration	8 weeks

RESEARCH METHODS IN COMPUTER SCIENCE

Module aims

This module aims to:

- Provide a deep and systematic knowledge of the nature of strategic computing projects that harness recent development within the domain of computer science.

- Equip students with the ability to undertake independent research with a view to specifying a strategic IT project; including problem and solution definition, and the ability to compare and analyse competing solutions.

- Furnish an ability to manage, conduct and monitor strategic IT projects using a range of tools and techniques.

- Provide an in-depth knowledge and understanding of the information security issues related to the management, conducting and monitoring of IT projects, including the associated risk management.

- Highlight the Legal, Social, Ethical and Professional (LSEP) issues applicable to computing projects and the relevant codes of ethics and practices.

- Enhance and develop transferable skills in the context of the presentation and communication of technical material to a range of audiences.

Learning outcomes

Students will be able to:

- Investigate and define a problem in terms of recent innovations and the current technological state of the art; and in terms of end-user (customer) needs and cost drivers.

- Critically review current literature concerning key developments in a particular domain, and identify limitations and avenues with a view to further development and entrepreneurship.

- Define and evaluate a computing solution to a recognised problem taking into consideration technical constraints, risks and safety aspects; and the Legal, Social, Ethical and Professional Issues (LSEPI), including information security requirements.

- Manage the design, specification and implementation of a computing solution to a recognised problem using appropriate tools and practices.

- Critically evaluate a proposed computing solution to a recognised problem.

Syllabus

- Overview of research methods

- Legal, social, ethical and professional issues

- Literature review

- Research project specification

- Project management

- Project conduct

- Project evaluation

- Technical writing

Learning and teaching methods

The mode of delivery is by online learning, facilitated by a Virtual Learning Environment (VLE). This mode of study enables students to pursue modules via home study while continuing in employment. Module delivery involves the establishment of a virtual classroom in which a relatively small group of students (usually 10-25) work under the direction of a faculty member. Module delivery proceeds via a series of eight one-week online sessions, each of which comprises an online lecture, supported by other eLearning activities, posted electronically to a public folder in the virtual classroom. The eLearning activities will include lecture casts, live seminar sessions, self-assessment activities, reading materials and other multimedia resources. Communication within the virtual classroom is asynchronous, preserving the requirement that students are able to pursue the course in their own time, within the weekly time-frame of each seminar. An important element of the module provision is active learning through collaborative, cohort-based, learning using discussion fora where the students engage in assessed discussions facilitated by the faculty member responsible for the module. This in turn encourages both confidence and global citizenship (given the international nature of the online student body).

MPH / PG Dip / PG Cert

Module code	CSCK700	NQF level	Level 7
Credit value	60 credits	Module duration	40 weeks

COMPUTER SCIENCE CAPSTONE PROJECT

Module aims

This module aims to:

- Equip students with the ability to plan and conduct an independent technical project over an extended period of time.

- Allow students to successfully complete a self-directed project culminating in a detailed written dissertation and video presentation.

- Provide an opportunity for students to reflect on and use tools and techniques acquired during the preceding taught part of the programme.

- Encourage students to consider and address the legal and ethical issues surrounding their project topic and relate these to the professional standards of the Chartered Institute for IT.

Learning outcomes

Students will be able to:

- Conduct independent research and development within the context of a computer science project.

- Produce detailed written documentation to a standard expected of a professional in the field of computer science.

- Develop a stand-alone artefact that meets the requirements identified and conforms to a design specification.

- Articulate the legal, social, ethical and professional issues surrounding an extended project, and follow relevant professional codes of practice.

- Communicate technical information clearly and succinctly to a broad, non-specialist audience.

- Evaluate project outcomes with reference to key research publications in the relevant field.

Learning and teaching methods

The mode of delivery is by online learning, facilitated by a Virtual Learning Environment (VLE). This mode of study enables students to pursue modules via home study while continuing in employment. Module delivery involves the establishment of a virtual classroom in which a relatively small group of students (usually 10-25) work under the direction of a faculty member. Module delivery proceeds via a series of eight one-week online sessions, each of which comprises an online lecture, supported by other eLearning activities, posted electronically to a public folder in the virtual classroom. The eLearning activities will include lecture casts, live seminar sessions, self-assessment activities, reading materials and other multimedia resources. Communication within the virtual classroom is asynchronous, preserving the requirement that students are able to pursue the course in their own time, within the weekly time-frame of each seminar. An important element of the module provision is active learning through collaborative, cohort-based, learning using discussion fora where the students engage in assessed discussions facilitated by the faculty member responsible for the module. This in turn encourages both confidence and global citizenship (given the international nature of the online student body).

MPH / PG Dip / PG Cert

DATA SCIENCE AND
ARTIFICIAL INTELLIGENCE

USEFUL INFORMATION

Fees and funding

For current information on tuition fees and funding options, please ask our course consultants for more details. ☺**+852 9545 5878**

Careers

Data science and Artificial Intelligence (AI) has major application in many different sectors, including IT, healthcare, government agencies and technology. Organisations across these sectors, both commercial and non-commercial, are experiencing a significant recruitment challenge. Nearly every organisation uses data science and AI to refine and streamline business practices. Employment opportunities within the data science and AI sector far outstrip the supply of qualified data science graduates. The MSc Data Science and AI will address this skills gap by providing graduates with employment opportunities across the sector with a particular focus on, but not limited to, career opportunities within the field of Data science and AI. This includes interdisciplinary opportunities by coupling knowledge of AI and Data science with the knowledge that graduates have acquired from their first degree. Job titles are wide and varied, examples include: Data Analyst, Data Scientist, Database Manager, Machine Learning Practitioner, and IT consultant.

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