澳門科技大學
MACAU UNIVERSITY OF SCIENCE AND TECHNOLOGY

創新工程學院

FACULTY of INNOVATION ENGINEERING

www.must.edu.mo

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▲ 2022/2023 Faculty Graduation Ceremony Group Photo 2022/2023 學年學院畢業典禮合照

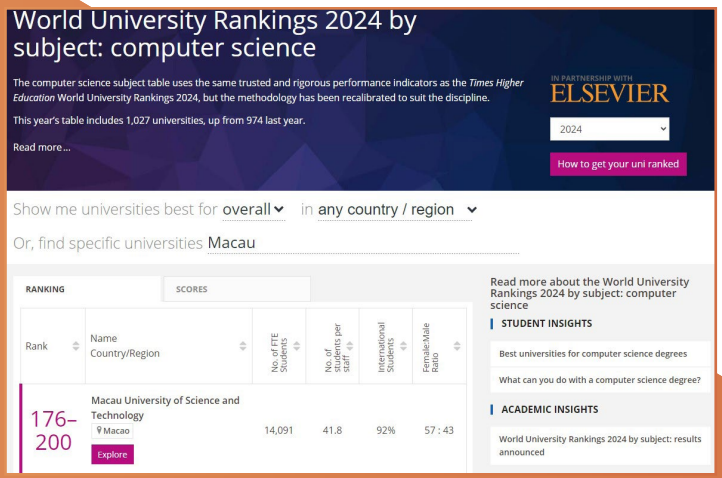
The Strategic Plan of Macau University of Science and Technology (M.U.S.T.) lays out an ambitious blueprint for the University's development objectives and priorities in the five-year period 2021-2025. It particularly calls for further strengthening of the engineering disciplines and stipulating more coherent academic planning and development of areas of excellence.

We live in a time when innovation and technological development take place at an increasingly fast pace. To prepare and cultivate future engineering talents and leaders who can succeed and thrive in such a challenging time, educators worldwide have come to the consensus that the academic approach to engineering disciplines and interdisciplinary collaborations is in need of a fundamental rethinking and strategizing. This is what inspires the University to undertake the initiative of creating **Faculty of Innovation Engineering (FIE)**.

Innovation Engineering is about creating scientific and technological breakthroughs based on fundamental, applied and multi-disciplinary research. Innovation – a key driving force of a knowledge economy – is also about an entrepreneurial mindset to explore the unknown, to imagine the unthinkable, to make use of emerging technologies and novel multi-disciplinary approaches and business models to tackle grand challenges, and to create social and economic value. The decision to establish FIE is based on extensive deliberation by the University leadership, substantial consultation with stakeholders, careful examination of similar initiatives from universities and research institutes worldwide, and positive feedbacks from high-tech leaders. Faculty of Innovation Engineering (FIE) was officially unveiled on March 27, 2022.

SCHOOL OF COMPUTER SCIENCE AND ENGINEERING

School of Computer Science and Engineering (Former Faculty of Information Technology) is one of the first four faculties established in the newly founded Macau University of Science and Technology in 2000. It offers a comprehensive suite of degrees: Bachelor of Science, Master of Science, and Doctor of Philosophy degrees. Currently, the School offers three majors in the Bachelor of Science degree: (1) Computer Science, (2) Electronic and Information Engineering, and (3) Software Engineering. Bachelor of Science in Artificial Intelligence is started. There are two Master's degree programs in the School: Master of Science degree which includes three focus areas: (1) Computer and Information Systems, (2) Communication Engineering, and (3) Space Information Technology; and Master of Science in Applied Mathematics and Data Science. For Doctor of Philosophy in Science degree, there are three focus areas: (1) Computer Technology and Application, (2) Electronic Information Technology, and (3) Space Information Technology. In addition, the School recently established two new PhD degree programs: Doctor of Philosophy in Advanced Networking degree, Doctor of Philosophy in Artificial Intelligence degree and Doctor of Philosophy in Mathematics. Over the years, 1610 BSc's, 582 MSc's, and 175 PhDs have graduated.



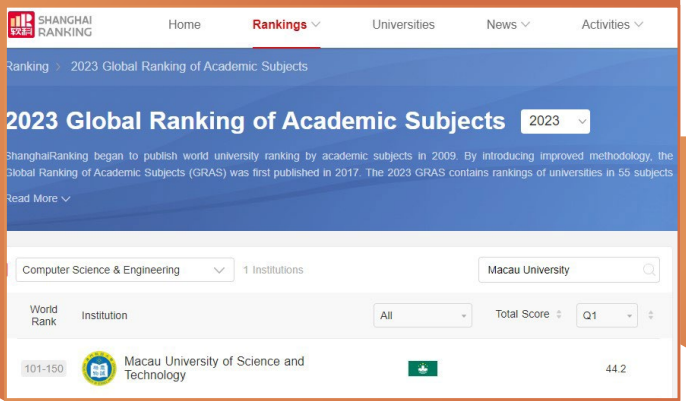
▲ Computer Science at M.U.S.T is ranked 176-200 world-wide by the Times Higher Education World University Rankings by Subject in 2024
泰晤士高等教育 (Times Higher Education) 發佈的 2024 年世界大學學科排行榜中，澳科大計算機科學位列世界 176-200 區間

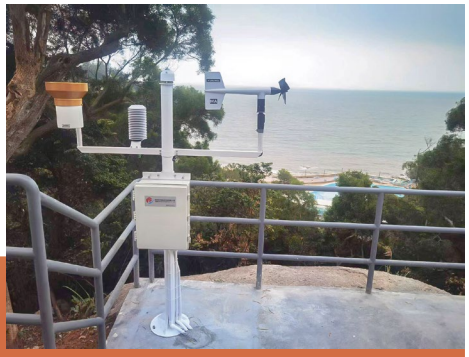
Computer Science at M.U.S.T is ranked 176-200 world-wide by the Times Higher Education World University Rankings by Subject in 2024. For Shanghai Ranking's Global Ranking of Academic Subjects 2023, Computer Science and Engineering at M.U.S.T. is ranked at 101-150 among over 500 universities in the world. In the latest release of "Essential Science Indicators (ESI)" in July, 2021, by Clarivate Analytics (former Thomson Reuters), it is revealed that the Computer Science field of M.U.S.T. has for the first time joined the rank of the top 1% among universities and research institutes across the world in the relevant area.

DEPARTMENT OF ENGINEERING SCIENCE

Corresponding to rapid advances of modern science and technology, the frontiers of engineering application are continuously expanding. While the contents of engineering disciplines are quickly increasing, cross disciplinary training is becoming even more critical. The need for broad knowhow is also a necessity for engineering related management and business practices. The Department of Engineering Science under the Faculty of Innovation Engineering is created in response to these challenges. The Department provides training that emphasizes on a solid foundation in mathematics, science, and technology whilst providing students with broad interdisciplinary exposures (with areas of concentrations). Such foundation is a pre-requisite for nurturing the capacity to pursue advanced work. The Department aims at producing engineers who can deal with the technically multifaceted nature of modern-day projects and can create solutions with overall considerations. Areas of concentration include intelligent systems engineering, biotechnology, sustainability, and engineering management. The Department offers bachelor's degree programs in Bachelor of Science in Automation and Systems Engineering and Bachelor of Engineering in

▼ For Shanghai Ranking's Global Ranking of Academic Subjects 2023, Computer Science and Engineering at M.U.S.T. is ranked at 101-150
上海軟科於 2023 年發佈的「2023 軟科世界一流學科排名」中，位列世界 101-150 區間





◥ National Observation and Research Station of Coastal Ecological Environments in Macao set up a ground weather station that can measure temperature, humidity, wind speed and direction, air pressure and precipitation.
澳門海岸帶生態環境國家野外科學觀測研究站內設置地面氣象站，此儀器是測量温度、濕度、風速風向、氣壓和降水量。

Interdisciplinary Engineering (Technology and Management), a Master of Science degree program in Intelligent Technology, and one Doctor of Philosophy degree program in Intelligent Science and Systems.

The Department has made significant contributions in the engineering science area. According to the report of "Essential Science Indicators (ESI)" made by Clarivate Analytics (formerly Thomson Reuters) in 2019, MUST's rank in the systems engineering field is in the top 1% among universities and research institutes across the world. Also, according to the Shanghai Ranking's Global Ranking of Academic Subjects announced in 2023, Automation & Control is ranked 51-75 among 500 universities in the world.

DEPARTMENT OF MATERIALS SCIENCE AND ENGINEERING

With the aim to adapt the challenging needs of Macao Society, Department of Materials Science and Engineering (DMSE) at M.U.S.T. was established in March, 2022 under the leadership of Chair Prof. Shuit-Tong Lee, an academician of the Chinese Academy of Sciences and The Academy of Sciences for the Developing World. DMSE will be guided by the Strategic Development Outline of the Macao SAR Government for the Greater Bay Area as well as the Research Development Plan of Macau University of Science and Technology. DMSE is mainly oriented to the fields of artificial intelligence, advanced manufacturing, biomedicine and comprehensive health. It will focus on the advanced functional materials, and prioritize nanomaterials and nanotechnology which falls in the categories of information display, organic optoelectronics, flexible electronics, wearable intelligent sensors, biomedical materials, nano-catalysis and energy materials, functional surfaces and interfaces, and materials genome etc. DMSE has established an international high-level faculty team and gradually established the academic status all over the world. It is also planning to set up a master's degree program and a doctoral degree program in "Materials Science and Engineering" to cultivate innovational talents characterized as investigative, interdisciplinary, and international frontier as well as conceptualized by innovative thinking ability, interdisciplinary advantages, and international vision.

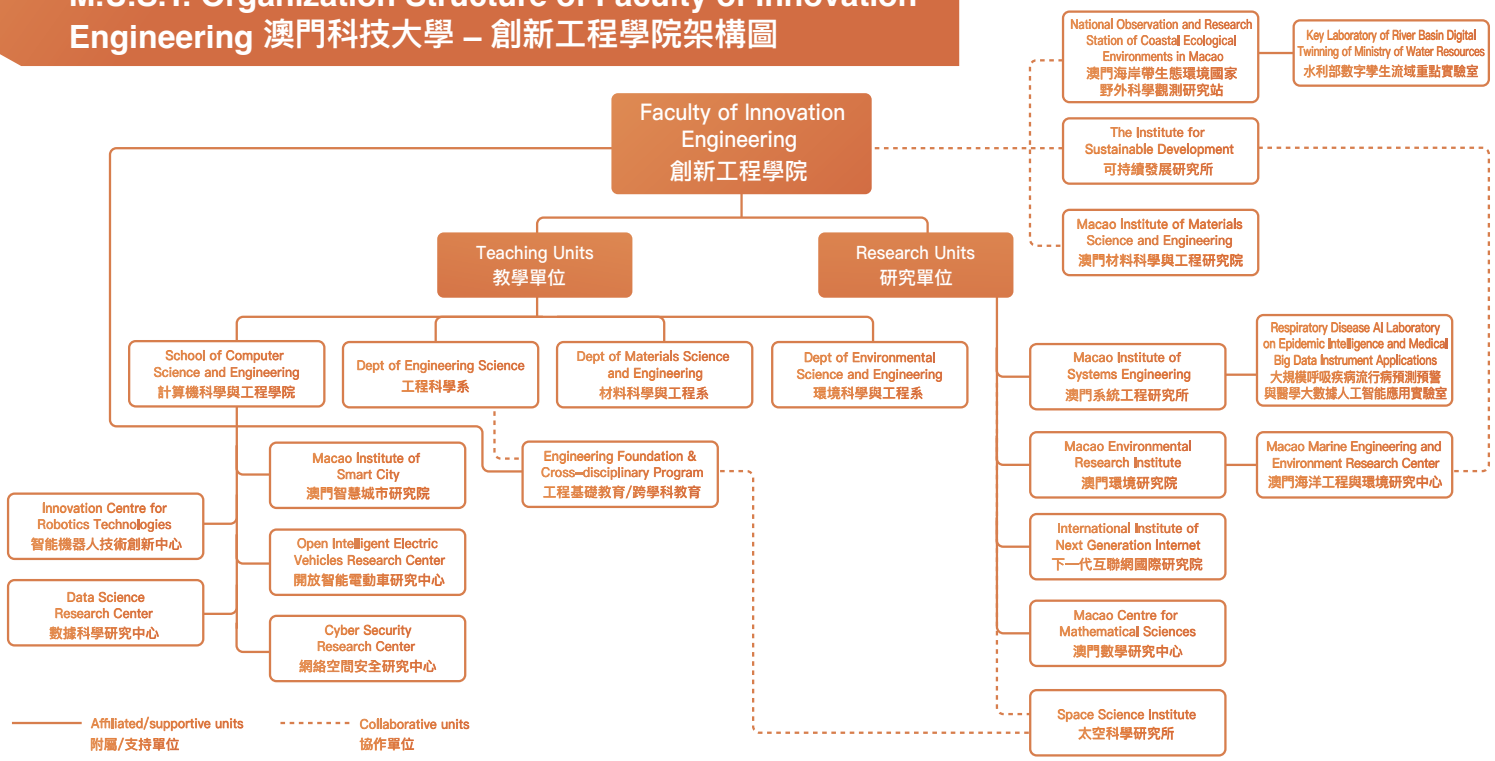
DEPARTMENT OF ENVIRONMENTAL SCIENCE AND ENGINEERING

The Department of Environmental Science and Engineering is an important academic platform for the professional program in engineering education and research, which may lead to further development of technologies to tackle critical environmental issues. In order to achieve the goal of "Carbon Peak in 2030 and Carbon Neutrality in 2060" and to meet the demands of the ecological civilization in China, the Department of Environmental Science and Engineering has been building a system of educational training for interdisciplinary professionals. A undergraduate degree program (B.Sc. in "Environmental Science and Engineering") and a postgraduate degree program (M.Sc. in "Environmental Science and Management") have commenced with student admission since 2024 and 2017. The "Environmental Science and Engineering Doctoral degree program" has also been proposed. The Department of Environmental Science and Engineering is well equipped with laboratories for teaching and research in environmental analyses, such as GC-MS, AAS, ICP-OES, ICP_MS, HPLC-MS – developed in collaboration with the National Observation and Research Station of Coastal Ecological Environments in Macao; two Guangdong-Hong Kong-Macao Joint Laboratory: The Guangdong-Hong Kong-Macao Environmental and Quality, Collaborative and Innovative Joint Laboratory and The Guangdong-Hong Kong-Macao Joint Laboratory on Pollutant Exposure and Health.

Based on the research platform of the university, a research group of 20 internationally recognized scholars with various backgrounds led by President Joseph Hun-wei Lee has been formed. The research focuses are hydro-environment engineering and coastal water quality modeling, intelligent monitoring of air-land-sea continuum for Macao ecological environment, assessment and forecast technology for coastal environment, transport and transformation processes, ecological and environmental effect and control technology on key and emerging pollutants, and municipal solid waste recycling and management.

▲ Environmental Sciences Laboratory 環境科學實驗室

M.U.S.T. Organization Structure of Faculty of Innovation Engineering 澳門科技大學 – 創新工程學院架構圖



Academic Units / Departments 學術單位 / 學系	Degree Program 學位課程	Major 專業	Duration of Study (Year) 修讀年期	Medium of Instruction 授課語言
School of Computer Science and Engineering 計算機科學與工程學院	Doctor of Philosophy in Science 理學博士	Computer Technology and Application / Electronic Information Technology / Space Information Technology 計算機技術及其應用 / 電子資訊科技 / 太空資訊技術	3	English/Chinese 英 / 中
	Doctor of Philosophy in Advanced Networking 先進網絡博士		3	English/Chinese 英 / 中
	Doctor of Philosophy in Artificial Intelligence 人工智能博士		3	English/Chinese 英 / 中
	Doctor of Philosophy in Mathematics 數學博士		3	English/Chinese 英 / 中
	Master of Science (Information Technology) 理學碩士 (資訊科技)	Computer and Information Systems / Communication Engineering / Space Information Technology 計算機與資訊系統 / 通訊工程 / 太空資訊技術	2	English/Chinese 英 / 中
	Master in Applied Mathematics and Data Science 應用數學與數據科學碩士		2	English/Chinese 英 / 中
	Bachelor of Science 理學學士	Computer Science[1] / Electronic and Information Engineering / Software Engineering[1] 計算機科學 [1] / 電子與信息工程 / 軟件工程 [1]	4	English/Chinese 英 / 中
	Bachelor of Science in Artificial Intelligence 人工智能理學學士		4	English/Chinese 英 / 中
Department of Engineering Science 工程科學系	Doctor of Philosophy in Intelligent Science and Systems 智能科學與系統博士		3	English/Chinese 英 / 中
	Master of Science in Intelligent Technology 智能技術碩士		2	English/Chinese 英 / 中
	Bachelor of Science in Automation and Systems Engineering 自動化與系統工程理學學士		4	English/Chinese 英 / 中
	Bachelor of Engineering in Interdisciplinary Engineering (Technology and Management) 跨學科 (科技及管理) 工程學士		4	English/Chinese 英 / 中
Department of Materials Science and Engineering 材料科學與工程系	Doctor of Philosophy in Materials Science and Engineering [2] 材料科學與工程博士 [2]		3	English/Chinese 英 / 中
	Master of Materials Science and Engineering [2] 材料科學與工程碩士 [2]		2	English/Chinese 英 / 中
Department of Environmental Science and Engineering 環境科學與工程系	Doctor of Philosophy in Environmental Science and Engineering [2] 環境科學與工程博士 [2]		3	English/Chinese 英 / 中
	Master of Environmental Science and Management 環境科學與管理碩士		2	English/Chinese 英 / 中
	Bachelor of Environmental Science and Engineering [2] 環境科學與工程學士 [2]		4	English/Chinese 英 / 中

[1] Major in "Computer Science" and "Software Engineering" have "Artificial Intelligence" direction.
[2] The new programs are planned to be launched in the 2024/2025 academic year, and to be registered with Education and Youth Development Bureau and published in the "Macao Special Administrative Region Official Gazette".

[1] "計算機科學" 及 "軟件工程" 專業範疇設有 "人工智能" 方向。
[2] 2024/2025 學年擬開辦之新課程，並將於教育及青年發展局完成課程登記及刊登《澳門特別行政區公報》後方正式運作。

▲ Group photo of the orientation meeting for 2023 doctoral students in the Department of Materials Science and Engineering
材料科學與工程系 2023 年級博士新生迎新會合照

▲ Students won the First Prize of Network Track in Huawei ICT Competition
學生獲得華為 ICT 大賽網絡賽道第一名

澳門科技大學的五年策略規劃（2021- 2025 年）為大學的發展目標和重點發展方向制定了宏偉的藍圖。在重點發展方向中特別提出進一步加強工程學科建設以及鞏固優勢學科發展。我們生活在一個創新和技術高速發展的時代。在如此充滿挑戰的年代，為了成功培養未來的科技人才和領導者，重新調整學術和教育的目標，鞏固多學科、跨學科研發和教育的基石，已經成為全球教育工作者達成的共識。為適應時代的發展和社會的需求，大學**創新工程學院（FIE）**由此而生。

創新工程是在基礎研究、應用研究和多學科交叉研究中尋求科學和技術上突破的新型工程學科。創新不僅是知識經濟的關鍵驅動力，也是探索未知世界的進取心態，是對看上去似乎不能實現的事物的創新探索和展望，是將能夠創造巨大社會和經濟價值的跨學科新技術、新方法和新商業模式應用的能力。

成立創新工程學院是在大學領導層深思熟慮，與持份者充分磋商，對全球大學和研究機構類似舉措認真研究，以及參考了來自科技界翹楚的積極反饋而做出的重大決定。澳門科技大學創新工程學院於 2022 年 3 月 27 日正式成立。

▲ Macao Institute of Systems Engineering and IKAS Industry set up the Collaborative Laboratory of Intelligent and Manufacturing Systems in 2020
2020 年澳門系統工程研究所與埃克斯（工業）成立人工智能與製造系統聯合實驗室

計算機科學與工程學院

計算機科學與工程學院（原資訊科技學院）創建於 2000 年，是大學最早的四個學院之一，擁有從學士、碩士到博士的完整人才培養體系。目前理學學士學位課程設有：計算機科學、電子與信息工程和軟件工程三個專業；而人工智能理學學士學位課程現已開辦；理學碩士（資訊科技）學位課程設有：計算機與資訊系統、通訊工程和太空資訊技術三個專業，以及應用數學與數據科學碩士課程；而理學博士學位課程設有：計算機技術及其應用、電子資訊科技和太空資訊技術三個專業，先進網絡博士學位課程，人工智能博士學位課程以及數學博士學位課程。歷年來，學院已培養了近 1610 名理學學士，582 名理學碩士，以及 175 名理學博士。

澳門科技大學的計算機科學專業，在泰晤士高等教育 (Times Higher Education) 發佈的「2024 年世界大學學科排行榜」中，位列世界 176-200 區間；以及在上海軟科於 2023 年發佈的「2023 軟科世界一流學科排名」(Shanghai Ranking's Global Ranking of Academic Subjects 2023) 中，位列世界 101-150 區間，此次排名的對象為全球 500 餘所大學。科睿唯安 (原湯森路透) 於 2021 年 7 月發佈的「基本科學指標資料庫」(Essential Science Indicators，簡稱 ESI) 統計數據顯示，澳門科技大學的計算機科學首次進入相關學科領域全球高校及科研機構排名前 1%。

工程科學系

由於現代科技的快速發展，工程科學應用的前沿不斷擴張，其涵蓋的範圍日趨多元而相互交叉，對相關的商務與管理亦造成了新的要求。澳門科技大學創新工程學院的工程科學系正是因應這些挑戰而設，學系的學科集成自動化，人工智能（AI），系統工程，可持續與環境，生物科技，商務與管理等，對應設立自動化與系統工程理學學士和跨學科 (科技及管理) 工程學士兩本科課程，智能技術碩士，和智能科學與系統博士課程。

▼Prof. Zhanchuan Cai's Team from M.U.S.T. Won the Second Prize of the National Teaching Achievement Award
澳科大蔡占川教授團隊榮獲國家級教學成果二等獎

工程科學系已有矚目的研究成果和相當的學術地位，按照「科睿唯安」(原「湯森路透」) 於 2019 年 5 月發佈的「基本科學指標資料庫」(Essential Science Indicators，簡稱 ESI) 統計數據，澳門科技大學的系統工程科學首次進入全球高校及科研機構相關學科領域排名前 1%。在「上海軟科」於 2023 年發佈「軟科世界一流學科排名 2023」(Shanghai Ranking's Global Ranking of Academic Subjects) 中，澳門科技大學控制科學與工程學科位列世界 51-75 區間。

材料科學與工程系

為適應澳門社會不斷變化的需求，2022 年 3 月，澳門科技大學材料科學與工程系在澳門材料科學與工程研究院的全力支持下，由中國科學院院士、發展中國家科學院院士李述湯教授領銜組建。

材料科學與工程系將以澳門特區政府的粵港澳大灣區戰略發展綱要以及澳門科技大學的科研發展規劃為指引。學系主要面向人工智能、先進製造、生物醫用與大健康領域，以先進功能材料為核心，重點開展信息顯顯示、有機光電器件、柔性電子、可穿戴智能傳感、生物醫用材料、納米催化與能源材料、功能表面與界面、材料基因組等方向的前沿交叉融合創新，已建立了一支國際高水準教師隊伍，正逐步建立國內外的學術地位。計劃開設“材料科學與工程”碩士學位課程及博士學位課程，以“研究性、學科交叉性、國際前沿性”為培養特質，以“具有創新思維能力、具備學科交叉優勢、擁有國際化視野”為培養理念，開展材料專業創新人才培養。

環境科學與工程系

環境科學與工程系致力於環境專業人才培養以及環境污染控制技術研發的重要教學和科研機構。面向“2030 碳達峰 2060 碳中和”雙碳目標和國家生態文明建設的需求，環境科學與工程系正在建設從本科教學到博士研究生培養的全方位人才培養體系。“環境科學與工程學士學位課程”和“環境科學與管理碩士學位課程”分別於 2024 年及 2017 年開始招生，並計劃開設“環境科學與工程博士學位課程”。

環境科學與工程系依託澳門海岸帶生態環境國家野外科學觀測研究站 (澳門國家野外站)，兩個粵港澳大灣區聯合實驗室包括粵港澳環境質量協同創新聯合實驗室和粵港澳污染物暴露與健康聯合實驗室，配備有用於環境分析的精密儀器設備如氣象色譜高解析度質譜儀精密電子天平離子色譜儀，原子吸收光譜儀、ICP-OES、ICP-MS、HPLC 等大型化學分析儀器，可滿足教學和研究需求。

依託大學及相關研究平臺，環境科學與工程系已經組建了一支由李行偉校長領銜的近 20 人具多學科背景和能力的國際化高水平團隊，研究方向集中於環境水力學和近海水質模擬技術、澳門生態環境天空地海一體化智能監測技術、海岸帶生態環境風險評價與預報預警技術、環境質量演化過程和調控機制、典型污染物的生態環境效應及控制技術、城市固體廢物循環和管理等方面。

Enquiries 查詢

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