

# **University of Macau Five-Year Development Plan (Academic Years 2021/22 – 2025/26)**

## **(Outline)**

### **Vision**

The University of Macau (UM) wishes to position itself as a university with firm roots in Macao, while at the same time being committed to participating in the development of the Greater Bay Area. UM hopes to integrate itself into national development while reaching out to the world. Through quality student-centred education, key research subjects with international impact, and a high standard of community services, it aspires to become an internationally recognised university of excellence.

### **Mission**

The University of Macau endeavours to leverage its uniqueness and strengths, as highlighted by a learning environment where Chinese culture plays a major role and diverse cultures coexist, and by a system of whole-person education underpinned by faculties and residential colleges in an international education setup. The university is committed to:

- Upholding the university motto - Humanity, Integrity, Propriety, Wisdom and Sincerity;
- Cultivating citizens with innovative abilities who exhibit love for their home country, possess global perspectives and competitiveness, and shoulder social responsibilities necessary for the development of Macao, the nation and beyond;
- Promoting academic research and industry-academia-research cooperation to facilitate sustainable socio-economic development of Macao and support the development of the Guangdong-Hong Kong-Macao Greater Bay Area, thus serving the nation and humanity at large;
- Being firmly rooted in Macao, serving and enriching the local community at multiple levels and on all fronts.

### **Overall Development Objectives**

- Optimise the “4-in-1” collaborative education model to improve the quality of talent cultivation;
- Improve the standards of research innovation and produce outcomes with important academic impacts and application values in various areas;
- Steadily consolidate UM capabilities to assist the Macao SAR to achieve its development positioning, as well as to establish and secure its role as a centre for technological innovation and talent cultivation in the Greater Bay Area;
- Gather leading talents to form top academic teams and to raise the level of disciplinary development;

- Strive to become a comprehensive university with its own features and influence in the mainland and globally, and to steadily boost its international reputation.

## **Overall Development Strategy**

- The university has implemented the “R.I.S.E.” strategy, namely “Relevance”, “Impact”, “Significance” and “Excellence”. These will enable the university to achieve an overall improvement in the new era.
  - **Relevance:** Being rooted in Macao, taking part in the development of the Greater Bay Area, integrating into the nation and going international;
  - **Impact:** Amplifying UM’s academic impact in the world and contributions to the community;
  - **Significance:** Cementing the pursuit of its mission and giving full play to its strengths and features;
  - **Excellence:** Benchmarking with the world’s top universities, and establishing a prestigious higher education hub.

## **Strategy and Measures**

### **1. Enhancing the High-Level Talent Nurturing System**

#### **Appropriately Expanding the Student Body**

- In the next five years, UM’s total enrolment will increase from the current about 12,000 to about 17,000 students. The number of postgraduate students is also expected to grow steadily based on the demands of society, and the undergraduate enrolment will remain largely stable.
- UM will also enlarge the intake of non-local students, targeting mostly candidates from the mainland in particular the Greater Bay Area, and the Southeast Asian countries, the Portuguese-speaking countries, and the countries and regions along the Belt and Road Initiative.

#### **Providing High-Quality Undergraduate Education**

- Deepening the “4-in-1” integrated education model. Deepening the whole-person education and performing the advantages of collaborative education between residential colleges and faculties from four dimensions, namely Discipline-Specific Education, General Education, Research & Internship, and Community & Peer Education. To nurture students with seven competencies, namely responsible citizenship, global competitiveness, knowledge assimilation, teamwork and collaboration, service and leadership, cultural engagement and healthy lifestyle.

#### **Enhancing Postgraduate Education**

- For Master's students, UM will establish more taught programmes based on market demand, to serve the strategic needs of the nation and the society, and promote the education that combines research and application;
- For PhD students, UM will focus on supporting major research topics, and nurturing talents in the key areas set out in the university's strategic research layout. UM will strengthen collaborations with other higher education institutions and make use of high-level joint training programmes.

## **Improving the Layout and Development of Disciplines and Subjects**

### **• Disciplines Development Goals**

- UM will strive to maintain the number of subjects ranked top 1% in the Essential Science Indicators (ESI), and increase that number by the academic year 2025/26.
- UM will promote cross-disciplinary collaborations, and develop disciplines with regional characteristics and advantages to optimise the curricular structure.
- By developing cross-disciplinary platforms, UM aims to pool resources for the development of interdisciplinary studies to form a curricular system where various fields of study support each other in collaborative growth.

### **• Arts and Humanities**

- UM will explore, consolidate and enhance existing resources and advantages, with an emphasis on iconic disciplines including Literature, History, Philosophy, Linguistics, Studies of Foreign Languages such as Portuguese, English and Japanese, their associated cultures and comparative cultural studies, Macao Law, Global Law, Education, Sociology, Psychology, Public Administration, Economics, Communication, Management and Marketing, Accounting and Information Management, Finance and Business Economics, Integrated Resorts and Tourism Management, Arts and Design, and Creative Culture.
- UM is planning to establish the Department of Arts and Design, which will offer Master's and Doctoral programmes in Fine Arts. UM is also planning to establish a Bachelor's programme in Chinese Law and Global Law (English-taught), a Master's programme in Philosophy and Religious Studies, and more cross-disciplinary courses in Humanities and Social Sciences.

### **• Science, Engineering and Medicine**

- UM will enhance overall standards of the disciplines including Civil and Environmental Engineering, Electrical and Computer Engineering, Electromechanical Engineering, Computer and Information Sciences, Mathematics, Physics and Chemistry, Materials Science, Traditional Chinese Medicine, Biomedical Sciences, Medicinal Science, Medicinal Administration, and Public Health. UM also aims to integrate resources in the field of Health Sciences for the establishment of the Department of Biomedical Sciences, the Department of Pharmaceutical Sciences and the Department of Public Health and Medicinal Administration.
- UM plans to launch new disciplines in Advanced Materials and Marine Science and Engineering. The university will also launch a Bachelor degree programme in Pharmaceutical

Sciences as well as Master's programmes in Global Public Health, Internet of Things, Robotics and Unmanned Systems, Coastal and Environmental Engineering.

- **Interdisciplinary Development**

- UM will turn to areas where it holds advantages in research capabilities for integration of Humanities and Science to develop interdisciplinary subjects. These areas include Cognitive and Brain Sciences, Data Science, AI and Robotics, Arts and Design, Fintech, and Smart Tourism. UM also plans to launch a Master's programme in Cognitive Neuroscience.

## **2. Promoting a Collaborative, Open and Innovative Strategic Layout for Research**

- UM will implement the “P.I.C.K.” strategy for research development: Problem Orientation, Interdisciplinary Interaction, Collaborative Innovation, Knowledge Translation.
- A “3+3+3+3” **strategic layout model**: in its future research development, UM aims to highlight its unique features and strengths, scale new heights and strengthen cooperation. Taking a problem-oriented approach, UM will support, in particular, disciplines that showcase local characteristics and respond to global trends. A strategic layout will be devised based on the “3+3+3+3” model. The university will reinforce the work of the three State Key Laboratories in the fields of Chinese Medicine, Microelectronics and Internet of Things for Smart City, and develop three research platforms in emerging fields, namely the Ministry of Education Frontiers Science Centre for Precision Oncology, the Ministry of Education Joint Key Laboratory of Bioinorganic and Synthetic Chemistry and the Centre for Regional Oceans. UM will establish three interdisciplinary research platforms in the fields of Artificial Intelligence, Data Science and Cognitive and Brain Sciences, and strengthen the role of the Institute of Collaborative Innovation in establishing links and collaborations among the realms of Science and Technology, Humanities and Social Sciences. The university will also develop three Humanities and Social Sciences research platforms, namely the Centre for Macau Studies, the Asia-Pacific Academy of Economics and Management and the Institute of Advanced Studies in Humanities and Social Sciences.
- **Key National and Regional Research Platforms**
  - National level, including three State Key Laboratories (Chinese Medicine, Microelectronics and Internet of Things for Smart City) to facilitate the development of the State Key Laboratories, Ministry of Education Frontiers Science Centre for Precision Oncology, Ministry of Education Joint Key Laboratory of Bioinorganic and Synthetic Chemistry, National Centre for Applied Mathematics in Macao, and Ministry of Education Key Research Bases of Humanities and Social Sciences (Centre for Constitutional Law and Basic Law Studies, Education Research Centre, Centre for Chinese History and Culture, etc).
  - Regional level, including five joint laboratories with the Chinese Academy of Sciences (Brain and Cognitive Sciences, Artificial Intelligence and Robotics, Aerospace Information, Oceanology and Cancer), as well as multiple joint platforms in Guangdong and Hong Kong, and Macao Centre for Research and Development in Chinese Medicine.

## **3. Building the “5-in-1” Research Result Transfer System**

- UM will fully explore the leading role of its State Key Laboratories and focus on key industries such as the wider healthcare industry with Chinese medicine R&D as the starting point, and the high-tech industry and other key industries. The university will innovate its industry-academia-research system, optimise mechanisms for intensive integration of these three elements, and strive to blaze a trail for the commercialisation of research results.
- UM is actively constructing and improving the “5-in-1” system for research innovation and result transfer, by consolidating and building a high-level industry-academia-research platform incorporating the dimensions of innovation, service, management, cultivation and practice. Emphasis will be put on improving the quality and impact of the research achievements, systematically promoting technological innovation and research result transfer.
- Industry-Academia-Research Innovation Platform: UM will capitalise on various large-scale research platforms to promote industry-academia-research innovation, and create research outcomes that are helpful to promote Macao’s moderate economic diversification.
- Industry-Academia-Research Service Platform: UM will optimise the research service system, and continually provide professional and technological services to society from various areas. UM plans to establish the Macao Centre for Chinese Medicine Testing, build the UM Clinical Analysis Laboratory, performing the role of UMCERT Engineering Research and Testing Limited to provide professional infrastructure services to Macao.
- Industry-Academia-Research Management Platform: UM will further enforce its regulations and policies related to IP management, and UM manages its IP rights and industrialisation through UMTec Limited, and UM aims to systematically foster technological innovation teams and start-ups for Macao.
- Industry-Academia-Research Cultivation Platform: UM will continue to develop the National Co-Working Space, and nurture more innovative and entrepreneurial talents, bringing in more projects with potentials and matching them with the industry.
- Industry-Academia-Research Implementation Platform: UM will continue to construct the UM Demonstration Base for Industry-Academia-Research Cooperation in Hengqin, and other important research platforms in the Greater Bay Area. UM will serve the industrial development needs of Macao and the Cooperation Zone, and conduct high standard Industry-Academic-Research Cooperation with enterprises and higher education institutions on the mainland.

#### **4. Developing Quality and Efficient International Cooperation Networks**

- **UM will implement the “4S” internationalisation strategy:** namely “Strategic, Substantial, Specific and Sustainable”, so to form a strategic framework for international development to consolidate and enhance its international characteristics.
- **Expanding Global Strategic Partnership Networks**
- UM will deepen long-term cooperation with higher education institutions in the Portuguese-speaking countries, and UM will play a bridging role to promote collaborations among the mainland, Macao and the Portuguese-speaking countries.

- UM will enhance partnerships with higher education institutions in English-speaking countries.
- UM will increase overseas publicity, reinforce and expand international student recruitment, and take the Southeast Asian countries, the Portuguese-speaking countries, and the countries and regions along the Belt and Road Initiative as important sources of international students.
- **Strengthening Exchanges and Cooperation with the Mainland**
- UM will actively participate in collaborative development of higher education in the Greater Bay Area through major higher education alliances and platforms.
- UM will strengthen its cooperation network with first-class universities in the mainland.
- UM will offer more dual degree and joint programmes, and develop branded and featured programmes.

## **5. Developing Platforms to Serve Local Community**

- UM will develop a community service system that centres on advancing innovative research concerning the “One Country, Two Systems” principle, cultivating talents demanded by social development, developing high-level think-tanks, facilitating Macao’s development in accordance with its positioning, and promoting the sharing of resources. The university will organically combine the goal of becoming a university of excellence with the enhancement of its function in community service. Serving the local community is the fundamental responsibility of UM. Following national development strategies, the university will extend the scope of its community services to increase its interaction with society.
- UM will conduct innovative research concerning the “One Country, Two Systems” principle, and provide intellectual support to social development.
- UM will provide quality resources in teaching and research for the local community, and offer support and service for the education promotion of “Love the Nation, Love Macao” in Macao.
- UM will nurture more professionals for the Macao SAR government.
- UM will continually provide high-end training courses for the community.
- UM will continually nurture high-level tourism management professionals to support smart tourism development.
- UM will nurture more Portuguese bilingual and legal talents.
- UM will create a Chinese cultural base for research and promotion with features of brand and influence in the Greater Bay Area.
- UM will assist the Macao SAR government to compile the *Macao Chronicles*.
- UM will develop a base of education in technology innovation for Macao.
- UM will implement resource sharing and proactiveness in community services.

## **Supports and Assurances**

- **Developing High-standard Teams of Talents**

- UM will implement the “5A” strategy, based on the concept of “making our work environment pleasant for current staff members, and attractive for prospective ones”. This strategy comprises “Appreciate”, “Agglomerate”, “Advance”, “Attract” and “Appropriate”. UM will strive to develop a dynamic faculty with a worldwide academic reputation, exceptional teaching capability and high moral integrity.

- **Optimising the Management and Efficiency of Administration**

- UM will actively expand the sources of the university’s revenues, and strengthen the financial self-reliance of the university.
- UM will digitise the management of administrative documents to support the Macao SAR government’s electronic governance.
- UM will gradually implement the reform of the public university administrative system in accordance with the Macao SAR government.

- **Promoting Campus Development Key Projects**

- UM will carry out construction and fitting-out works of key housing projects, and provide a solid support for UM’s future development.
- UM will progressively conduct construction and fitting-out works on multiple laboratories and research facilities, and increase the numbers of teaching facilities and centres based on development needs, and upgrade current laboratories and classrooms.

- **Optimising the Planning and Use of University Space and Facilities**

- UM will re-examine the usage of space and facilities, and devise a master plan for their allocation and utilisation based on the university’s future development.

- **Exploring development opportunities in the Cooperation Zone**

- UM will continue to improve the teaching and research facilities in the ZUMRI, so to enhance its teaching and research standard.
- UM will strengthen the collaboration of Industry-Academia-Research, promote the transfer of research achievements, and serve the development of the Cooperation Zone.
- UM will explore the possibilities of bringing more learning, research and living opportunities for the university’s staff members and students.