



澳門大學
UNIVERSIDADE DE MACAU
UNIVERSITY OF MACAU

Newly offered programme in 2019/2020 academic year

Bachelor of Education in Integrated Science

(The programme is being registered and will come into operation upon publication in Macao SAR Gazette)

Introduction

The Faculty of Education of the University will launch a new interdisciplinary bachelor's degree programme entitled "Bachelor of Education in Integrated Science" aimed at fostering science education for Macao. The programme is structured to provide training in science education by integrating Physics, Chemistry and Biology content areas. Its foundation is centered on an integrated science with teacher specialization in Physics, Chemistry or Biology. Its goal is to nurture qualified junior and senior secondary school teachers in Macao. The new programme will meet the educational needs and leverage developmental growth in Macao. It addresses and fulfills the professional demands outlined for science education as formulated in "Curriculum Framework for Formal Education of Local Education System" and "The Requirements of Basic Academic Attainments of Local Education System" required by the Macao S.A.R government.

Features

- The programme covers a wide range of specialized areas in Physics, Chemistry and Biology.
- The programme provides a paradigm-shifted training in science education from a content focused curriculum to one focused on enabling students to learn and think across disciplines while developing in-depth knowledge in a specific concentration.
- The programme is designed for students who aspire to become a qualified science teachers and those who would involve in cross-disciplinary science careers.

Graduate Career Prospects

- Teachers
- Academic researchers
- Technicians
- Science journalists
- Engineering or Manufacturing related fields
- Government departments

Admission Channel

- Applicants may apply for admission by one of the following channels, whichever is applicable to them:
 - ✓ Admission Examination (Application period: 3 – 18 January 2019)
 - ✓ Direct Admission (Application period: 3 December 2018 – 18 April 2019)
- Please refer to the Registry's webpage at <https://reg.um.edu.mo/admission/> for details.



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Academic and Teaching Arrangement

1. Degree Award: Bachelor of Education
2. Area of concentration: Integrated Science with specialization in Biology, Chemistry or Physics. Students must choose one of the specializations.
3. Programme Duration: 4 years
4. Minimum credit requirement for graduation: 132 credits and pass all required courses
5. Medium of instruction: Chinese and English
6. Programme curriculum for Bachelor of Education in Integrated Science listed as below (Below curriculum may subject to change and final version will be announced on faculty website):

Course	Type	Credits
<i>1st Academic Year</i>		
Introduction to Education	Compulsory Major Course	3
Introduction to Biological Sciences	"	3
College Physics	"	3
Electromagnetism and Physical Optics	"	3
Introduction to College Chemistry	"	3
Advanced Mathematics I	"	3
Languages and Skills ^{1, 2}	"	12
Community and Peer Education ¹	"	2
General Education Course ¹	"	3
<i>Specialization in Biology</i>		
1 required elective from the "Required Course List for Specialization in Biology" of Bachelor of Education in Integrated Science	Required Elective	3
<i>Specialization in Physics and Chemistry</i>		
1 Free Elective ³	Free Elective	3
Total Credits		38
<i>2nd Academic Year</i>		
Science Education in Secondary Schools	Compulsory Major Course	3
Analytical and Environmental Chemistry	"	3
Advanced Mathematics II	"	3
Educational Psychology	"	3
General and Clinical Microbiology	"	3



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Course	Type	Credits
Sociology of Education	"	3
Scientific Inquiry and Practical Work in Secondary Schools	"	3
Earth and Universe	"	3
Genetics and Epigenetics	"	3
Inorganic Chemistry	"	3
Languages and Skills ^{1, 2}	"	3
Community & Peer Education ¹	"	1
General Education Course ¹	"	3
<i>Specialization in Biology</i>		
2 required electives from the “Required Course List for Specialization in Biology” of Bachelor of Education in Integrated Science	Required Elective	6
<i>Specialization in Physics</i>		
1 required elective from the “Required Course List for Specialization in Physics” of Bachelor of Education in Integrated Science	"	3
1 Free Elective ³	Free Elective	3
<i>Specialization in Chemistry</i>		
2 Free Electives ³	"	6
Total Credits		43
<i>3rd Academic Year</i>		
Introduction to Special Education	Compulsory Major Course	3
Assessment in Science Education	"	3
Teacher Ethics and Teacher Professional Development	"	3
Emerging Pedagogies of STEM Teaching	"	3
General Education Courses ¹	"	18
<i>Specialization in Biology</i>		
4 Free Electives ³	Free Elective	12
<i>Specialization in Physics</i>		
2 required electives from the “Required Course List for Specialization in Physics” of Bachelor of Education in Integrated Science	Required Elective	6



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Course	Type	Credits
2 Free Electives ³	Free Elective	6
<i>Specialization in Chemistry</i>		
3 required electives from the “Required Course List for Specialization in Chemistry” of Bachelor of Education in Integrated Science	Required Elective	9
1 Free Elective ³	Free Elective	3
Total Credits		42
<i>4th Academic Year</i>		
Supervised Teaching and School Experience	Compulsory Major Course	6
School Counselling and Guidance	"	3
Total Credits		9
Grand Total Credits		132

1. General Education course list will be posted on University of Macau’s website.
2. Students who test out of some of the “Languages and Skills course(s)” are required to make up the credits by taking additional Free Elective(s). Please refer to University of Macau’s website for the details of exemption application from taking “Language and Skills” courses.
3. Students can select any courses provided by home faculty or other faculties as free elective courses to fulfil credit requirement of Free Elective Course.



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**List of Required Elective Courses for
Bachelor of Education in Integrated Science**

List of Required Elective Courses for Specialization in Biology

Course	Credits
General and Clinical Biochemistry	3
Cell and Molecular Biology	3
Physiology and Pathophysiology	3
Development and Aging	3

List of Required Elective Courses for Specialization in Chemistry

Course	Credits
Physical Chemistry	3
Materials Physics and Chemistry	3
Organic and Polymer Chemistry	3
Nanochemistry	3

List of Required Elective Courses for Specialization in Physics

Course	Credits
Quantum Physics	3
Thermodynamic and Statistical Physics	3
Solid State Physics	3
Low-dimensional Physics	3