

Exhibit 2.1-1-2 Program Specification 2017

College of Creative Industry Bachelor of Science Program in Gems and Jewelry (Bilingual Program)

Degree title

Full title: Bachelor of Science (Gems and Jewelry)

Abbreviation: B.Sc. (Gems and Jewelry)

Program Goals

The program aims at:

1. Being an expert in the arts and sciences of gems and jewelry industry and wisely use the technology to create innovative products that represent Thainess and bring about the internationalization.
2. Developing graduates who can work as a team and be both a leader and a team player with suitable work ethics and attitudes.
3. Producing graduates who can integrate the knowledge with creative research work from outside of classroom with private sectors as well as the industry.

Program Characteristics

A bi-lingual practical program with modular teaching and learning system and work-integrated learning approach.

Careers and Employability

- 1 Entrepreneur in the gems and jewelry business
- 2 Production manager in the gems and jewelry organizations
- 3 Researcher in R&D division of the gems and jewelry organizations
- 4 Quality controller in the jewelry production division
- 5 Researcher in the gems and jewelry institutes
- 6 Gemologist
- 7 Lecturer in gemology
- 8 Designer in gems and jewelry
- 9 Sale and marketing in the gems and jewelry organizations

Semester periods

Semester 1	August - December
Semester 2	January – May
Summer semester	June – August

Applicant Qualifications

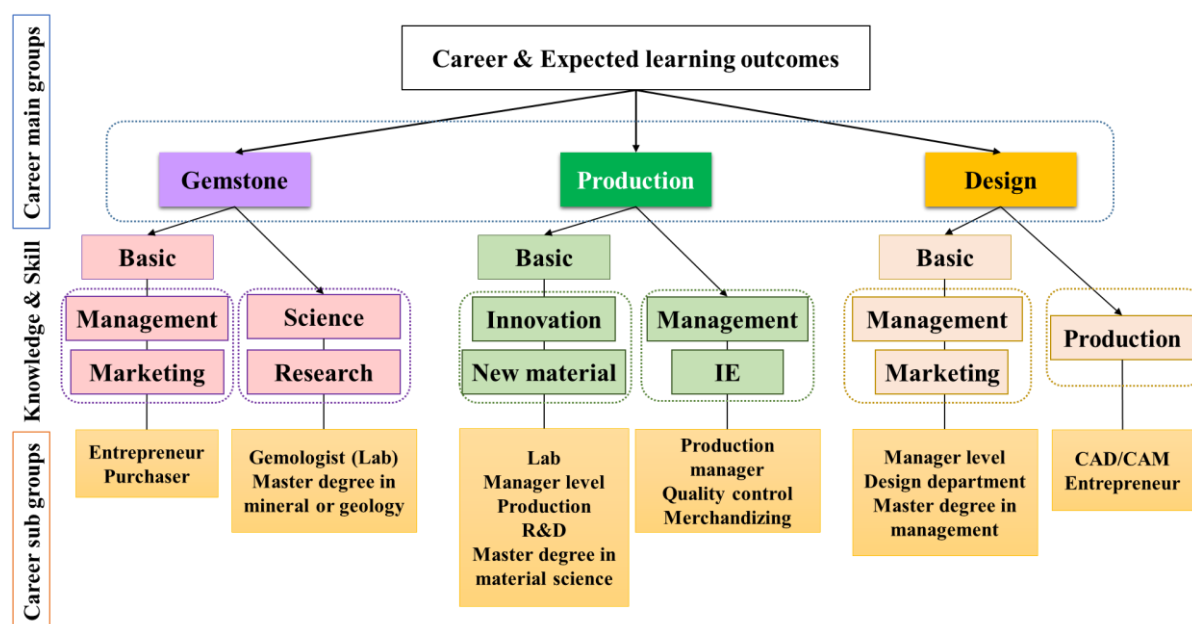
1. Both Thais and international students with the following qualifications:

- ☐ High-school diploma in the science-focused programs from regular Thai schools, or bi-lingual programs from international schools or its equivalent.
- ☐ High-school diploma from the international schools outside Thailand
- ☐ Other equivalent qualifications according to the rules and regulations of the university

Student Admission Policies

TCAS1	Portfolio and academic interview, personality test and career aptitude test
TCAS2	Gems and Jewelry background test, English score test and academic interview, personality test and career aptitude test
TCAS3	Clearing house process. NIETS score (GAT/PAT) and academic interview, personality test and career aptitude test
TCAS4	General admissionare. NIETS score and academic interviewing process, personality test and career aptitude test
TCAS5	University admission. Portfolio and academic interview, personality test and career aptitude test

Program Framework



Expected Learning Outcomes

ELO 1	Demonstrate general education knowledge and basic scientific knowledge
ELO 2	Possess the systematic knowledge of gems and jewelry gems and jewelry and communicate it effectively

ELO 3	Analyze systematically based on research, learning, and practice applying the technology and developing capability in a creative and timely manner as well as the lifelong learning approach
ELO 4	Think rationally and practice the thinking process, and convey the thoughts according to academic principles appropriately and effectively creating benefits at the international level
ELO 5	Possess the creativity in gems and jewelry using both insight and empathy in creating the innovation to the world
ELO 6	Exhibit unity in working with others at the international level, pay respect to others, be both a leader and a follower with virtue making the organization move forward efficiently
ELO 7	Use technology to search and collect the information, analyze the statistical data and communicate in the digital platform to the target, select the information effectively and appropriately, and present the results
ELO 8	Be honest, punctual, and discipline
ELO 9	Be public-minded and sacrifice for the general public
ELO 10	Be aware of the value of art and culture, be responsible for themselves, protect the environment, and consider the global society sustainably

Annually defined competencies according to the ELOs and assessment (Year Competency) are as follows

1. First year students can analyze and classify the types and quality of gems and be able to cut basic gems. This can be verified by
 - 1.1 Students pass the introductory certificate or its equivalent in gemology from a public or private institution or a committee that is approved by the program committee.
 - 1.2 Students pass Level 1 National Labor Skill Standard in gems cutting and can disseminate the basic knowledge in gems cutting and classification to high school students and other participants
2. Second year students are able to design and produce the jewelry, analyze the problems, and apply the knowledge in solving those problems in jewelry production. They pass Level 1 National Labor Skill Standard in at least 2 of these
 1. Jewelry casting
 2. Gems setting on the jewelry
 3. Jewelry assembly
3. Third year students can integrate the knowledge to create or improve an innovation for business purposes. This can be verified with one of these
 - 3.1 Students can present their research or innovation work to the business owners in an easily understandable and correct manner,
 - 3.2 Students can participate in a national or international competition that the program committee approved of, for instance Startup Thailand, or
 - 3.3 Students can create a model company or a piece of creative work and present it to the public, or its equivalent
4. Fourth year students can perform knowledge management in gems and jewelry. This can be verified through one of these
 - 4.1 Students enter a competition from their research work in the co-ed program, or
 - 4.2 Students participate in a research or consultancy project for a business with the program lecturers

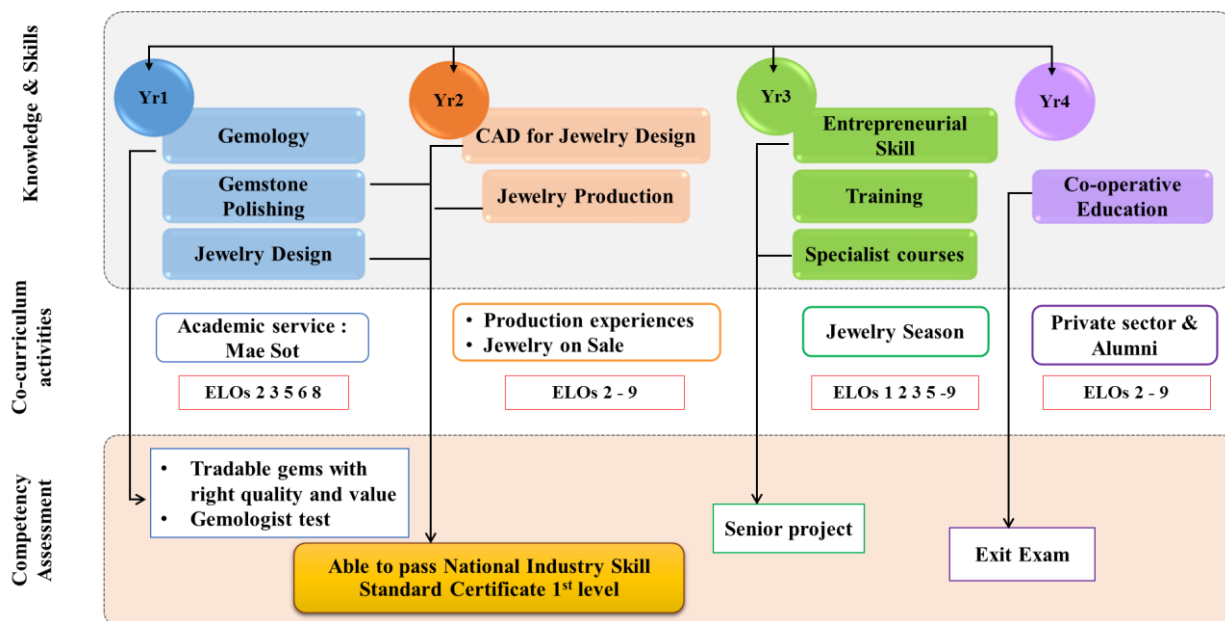


Figure 2 Year Competency Design

Curriculum Structure

Number of credits for the entire program

Total credits for the practical bachelor's degree program is no less than 130 credits

Detail		credits
1. General education courses	No less than	30
2. Specific courses	No less than	94
2.1 Core courses for creative industry		19
2.2 Specific courses	No less than	75
2.2.1 Compulsory specific courses		63
2.2.2 Elective specific courses	No less than	12
3. Free elective courses	No less than	6
Total	No less than	130

Study plan AY2017

Year 1 Semester 1	credits	Year 1 Semester 2	credits
General education courses	6 credits	General education courses	6 credits
SWU123 English for International Communication I	3(2-2-5)	SWU124 English for International Communication II	3(2-2-5)
SWU 151 General Education for Human Development	3(3-0-6)	SWU111 Thai for Communication	3(3-0-6)
Basic science and mathematics courses	3 credits	Basic science and mathematics courses	4 credits

MA115 Calculus I	3(3-0-6)	CH101 Principles of Chemistry II	3(3-0-6)
		CH191 Principles of Chemistry Laboratory II	1(0-3-0)
Program specific courses	6 credits		
GJ292 Physics for Gems and Jewelry Industry	3(3-0-6)		
GJ293 Chemistry for Gems and Jewelry Industry	3(3-0-6)		
Compulsory specific course	6 credits	Compulsory specific course	11 credits
GJ101 Systematic thinking and Mind Mapping for Jewelry	1(1-0-2)	GJ111 Introduction to Gemstone Industry	1(1-0-2)
GJ115 Introduction to Gemstone Cutting	2(1-2-3)	GJ112 Gem Identification I	1(1-0-2)
GJ131 Jewelry Design for Manufacturing	3(1-4-4)	GJ113 Gem Identification Laboratory I	2(0-4-2)
		GJ116 Gem Identification II	1(1-0-2)
		GJ117 Gem Identification Laboratory II	2(0-4-2)
		GJ118 Gem Identification III	1(1-0-2)
		GJ119 Gem Identification Laboratory III	2(0-4-2)
		GJ151 Business Ethics and Social Responsibility	1(1-0-2)
Total number of credits	21 credits	Total number of credits	21 credits

Year 2 Semester 1	credits	Year 2 Semester 2	credits
General education courses	3 credits	General education courses	18 credits
SWU 243 Personal Financial Management	3(3-0-6)	SWU137 Tennis	1(0-2-1)
Compulsory specific course	21 credits	SWU141 Life in a Digital World	3(3-0-6)
GJ201 Knowledge Management for Gems and Jewelry	1(1-0-2)	SWU 161 Human in Learning Society	2(2-0-4)
GJ231 Computer Aided Design for Jewelry	4(0-8-4)	SWU 252 Aesthetics for Life	3(3-0-6)

GJ251 Introduction to Gems and Jewelry Business	2(2-0-4)	SWU 258 Arts of Speaking and Presentation	2(2-0-4)
GJ261 Introduction to Jewelry Processing	1(1-0-2)	SWU 261 Active Citizens	3(3-0-6)
GJ262 Introduction to Jewelry Processing Laboratory	1(0-2-1)	General education course up to 1 credit	
GJ263 Master Mold	2(0-4-2)		
GJ264 Jewelry Production in Manufacturing	1(1-0-2)	Compulsory specific course	3 credits
GJ265 Jewelry Production in Manufacturing Laboratory	3(0-6-3)	GJ271 Materials for Gems and Jewelry Production	1(1-0-2)
GJ266 Jewelry Prototype for Casting	2(0-4-2)	GJ272 Materials for Gems and Jewelry Production Laboratory	2(0-4-2)
GJ267 Industrial Safety in Jewelry Manufacturing	1(0-2-1)		
Total number of credits	21 credits	Total number of credits	21 credits

Year 3 Semester 1	credits	Year 3 Semester 2	credits
Basic science and mathematics courses	6 credits		
ST243 Statistics for Sciences	3(2-2-5)		
GJ291 Mathematics for Gems and Jewelry Business	3(3-0-6)		
Compulsory specific course	9 credits	Compulsory specific course	7 credits
GJ301 Leadership and Human Resources Management	3(0-6-3)	GJ302 Pilot Research for Gems and Jewelry Production/Business	2(0-4-2)

GJ341 Entrepreneurship	2(2-0-4)	GJ303 Seminar in Gems and Jewelry	1(0-2-1)
GJ 351 History of the gems and jewelry business	1(1-0-2)	GJ305 Cooperative Education Preparation in Gems and Jewelry Industry	2(2-0-4)
GJ304 Internship in Gems and Jewelry	1(0-300-0)	GJ352 Economic and Manufacturing Cost Analysis	2(2-0-4)
		GJ361 Fashion Jewelry	2(0-4-2)
Elective specific courses	6 credits	Elective specific courses	9 credits
No less than 6 credits		No less than 9 credits	
Total number of credits	18 credits	Total number of credits	19 credits

Remark: Internship for Summer Semester of Year 2 is required no less than 300 hours

Year 4 Semester 1	credits	Year 4 Semester 2	credits
Compulsory specific course	6 credits		
GJ401 Cooperative Education in Gems and Jewelry Industry	6(0-18-0)		
		Free elective courses	3 credits
		Free elective courses No less than 3 credits	
Total number of credits	6 credits	Total number of credits	3 credits

Courses delivered in English

Core courses 9 credits

GJ 291	Mathematics for Gems and Jewelry Business	3(3-0-6)
GJ292	Physics for Gems and Jewelry Industry	3(3-0-6)
GJ293	Chemistry for Gems and Jewelry Industry	3(3-0-6)

Compulsory specific courses 21 credits

GJ112	Gem Identification I	1(1-0-2)
GJ113	Gem Identification Laboratory I	2(0-4-2)
GJ116	Gem Identification II	1(1-0-2)
GJ117	Gem Identification Laboratory II	2(0-4-2)

GJ118	Gem Identification III	1(1-0-2)
GJ119	Gem Identification Laboratory III	2(0-4-2)
GJ251	Introduction to Gems and Jewelry Business	2(2-0-4)
GJ266	Jewelry Prototype for Casting	2(0-4-2)
GJ271	Materials for Gems and Jewelry Production	1(1-0-2)
GJ272	Materials for Gems and Jewelry Production Laboratory	2(0-4-2)
GJ301	Leadership and Human Resources Management	3(0-6-3)
GJ352	Economic and Manufacturing Cost Analysis	2(2-0-4)

Remark: At least 9 credits of the elective specific courses in each group are taught in English

Curriculum Mapping with ELOs

Course		Expected Learning Outcome									
		1	2	3	4	5	6	7	8	9	10
1. Core courses											
1.1 Basic science and mathematics courses											
MA115	Calculus I	✓									
CH101	Principles of Chemistry II	✓									
CH191	Principles of Chemistry Laboratory II	✓									
ST243	Statistics for Sciences	✓		✓							
1.2 Core courses for creative industry											
GJ291	Mathematics for Gems and Jewelry Business	✓	✓					✓			
GJ292	Physics for Gems and Jewelry Industry	✓	✓					✓			
GJ293	Chemistry for Gems and Jewelry Industry	✓	✓					✓			
2. Specific courses											
2.1 Compulsory specific courses											
GJ101	Systematic thinking and Mind Mapping for Jewelry	✓		✓		✓		✓	✓	✓	
GJ111	Introduction to Gemstone Industry		✓						✓		
GJ112	Gem Identification I		✓			✓			✓		
GJ113	Gem Identification Laboratory I		✓			✓			✓		
GJ115	Introduction to Gemstone Cutting		✓			✓			✓		
GJ116	Gem Identification II		✓	✓		✓			✓		
GJ117	Gem Identification Laboratory II		✓	✓		✓			✓		
GJ118	Gem Identification III		✓	✓		✓			✓		
GJ119	Gem Identification Laboratory III		✓	✓		✓			✓		
GJ131	Jewelry Design for Manufacturing		✓	✓			✓		✓		✓
GJ151	Business Ethics and Social Responsibility		✓						✓	✓	
GJ201	Knowledge Management for Gems and Jewelry		✓	✓			✓		✓		
GJ231	Computer Aided Design for Jewelry		✓	✓		✓	✓	✓			
GJ251	Introduction to Gems and Jewelry Business		✓			✓	✓		✓	✓	
GJ261	Introduction to Jewelry Processing		✓	✓		✓	✓		✓		
GJ262	Introduction to Jewelry Processing Laboratory		✓	✓		✓	✓		✓		

Course		Expected Learning Outcome									
		1	2	3	4	5	6	7	8	9	10
GJ263	Master Mold		✓	✓		✓			✓		
GJ264	Jewelry Production in Manufacturing		✓	✓		✓			✓		
GJ265	Jewelry Production in Manufacturing Laboratory		✓	✓		✓			✓		
GJ266	Jewelry Prototype for Casting		✓	✓		✓	✓		✓		
GJ267	Industrial Safety in Jewelry Manufacturing			✓					✓		
GJ271	Materials for Gems and Jewelry Production		✓		✓				✓	✓	
GJ272	Materials for Gems and Jewelry Production Laboratory		✓		✓				✓	✓	
GJ301	Leadership and Human Resources Management		✓			✓	✓		✓	✓	✓
GJ302	Pilot Research for Gems and Jewelry Production/Business		✓	✓		✓	✓	✓	✓	✓	
GJ303	Seminar in Gems and Jewelry		✓	✓				✓	✓		
GJ304	Internship in Gems and Jewelry		✓	✓	✓		✓		✓		
GJ305	Cooperative Education Preparation in Gems and Jewelry Industry		✓		✓				✓		
GJ341	Entrepreneurship			✓		✓	✓	✓	✓		
GJ351	History of Gems and Jewelry Business		✓						✓	✓	
GJ352	Economic and Manufacturing Cost Analysis	✓		✓		✓			✓		
GJ361	Fashion Jewelry			✓			✓				✓
GJ401	Cooperative Education in Gems and Jewelry Industry		✓	✓	✓	✓	✓	✓	✓	✓	
2.2 Elective specific courses											
Group 1 Gems analysis and value addition											
GJ311	Advanced Gemstone Identification		✓	✓	✓	✓					
GJ312	Gemstone Enhancement and Synthesis		✓	✓		✓			✓		
GJ313	Physical Geology and Gemstone Deposits		✓	✓		✓			✓		
GJ314	Organic Gems		✓	✓		✓			✓		
GJ315	Crystallography and Optical Properties		✓	✓		✓			✓		
GJ316	Mineralogy		✓	✓		✓			✓		
GJ411	Gemstone Appraisal		✓	✓	✓	✓	✓		✓		
GJ412	Gemstone Characterization of Jewelry Production		✓	✓	✓	✓	✓	✓	✓		

Group 2 Entrepreneurship in gems and jewelry											
GJ342	Young Entrepreneur in Luxury and Lifestyle Business			✓		✓	✓	✓			
GJ343	Merchandizing in Jewelry Export Business		✓		✓	✓		✓	✓		
GJ344	Production Design and Management for Social Enterprise in Jewelry Business		✓		✓	✓		✓		✓	
GJ353	Retail Business			✓	✓		✓	✓			
GJ451	Creativity of Business Development			✓		✓		✓			
GJ452	Enterprise Resource Planning for Gems and Jewelry Manufacturing		✓		✓	✓	✓	✓	✓		
GJ453	Digital Business			✓		✓		✓			
ECR302	English for Career Preparation II	✓		✓	✓		✓				✓
Group 3 Design for jewelry production											
GJ331	Advanced Computer Aided Design for Jewelry			✓	✓	✓			✓		
GJ332	Advanced Computer Aided Prototyping for Jewelry			✓	✓	✓	✓		✓		
GJ333	Advanced Jewelry Design for Award and Competition				✓	✓					
GJ334	Inspiration and History for Designer					✓		✓			✓
GJ335	Antique Jewelry					✓					✓
GJ362	Materials Technology in Art				✓	✓		✓			✓
VSD301	Styling Study			✓		✓	✓		✓		
VSD336	Jewelry and Accessory Design		✓	✓		✓	✓			✓	
Group 4 Jewelry production and factory management											
GJ354	Gems and Jewelry Production Management			✓			✓	✓	✓		
GJ355	Quality Control in Gems and Jewelry Manufacturing		✓		✓	✓		✓	✓		
GJ356	Productivity Improvement		✓		✓	✓	✓	✓			
GJ363	Jewelry Casting Technology		✓		✓	✓	✓	✓			
GJ364	Jewelry Setting		✓			✓					
GJ365	Advanced Plating and Coating		✓		✓	✓					
GJ461	Factory Management		✓		✓	✓	✓	✓			
GJ471	Metal Forming and Joining Technology for Jewelry		✓		✓	✓					
Group 5 Material innovation for gems and jewelry											
GJ371	Nano Innovation of Materials for Jewelry Industry	✓	✓				✓	✓			✓
GJ372	Materials Characterization for Jewelry	✓	✓				✓	✓			
GJ373	Advanced Materials for Jewelry Production	✓	✓				✓	✓			

GJ374	Physical Metallurgy for Jewelry			✓	✓	✓		✓	✓		
GJ375	Mechanical Behavior of Materials	✓		✓				✓			
GJ376	Polymer Materials for Jewelry			✓	✓			✓			
GJ377	Ceramic Materials for Jewelry			✓	✓			✓			
GJ378	Thermodynamics of Materials			✓				✓			
GJ472	Physics Technology for Gems and Jewelry			✓	✓	✓	✓	✓			