

Exhibit 2.1-1-1 Program Specification 2019

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)

Philosophy

Creatively integrate art and science to create gems and jewelry innovation with heart and soul.

Program Goals

1. Being an expert in art and science in gems and jewelry industry and wisely used technology in creating innovative products that represents Thainess to become internationalization.
2. Developing graduates who can work as a team and be both leader and team player with work ethics and attitudes.
3. Producing graduates who can integrate knowledge and creative research work from outside classroom with private sectors as well as 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 gems and jewelry business
- 2 Production manager in gems and jewelry organizations
- 3 Researcher in R&D division of gems and jewelry organizations
- 4 Quality controller in jewelry production division
- 5 Researcher in gems and jewelry institutes
- 6 Gemologist
- 7 Lecturer in gemology
- 8 Designer in gems and jewelry
- 9 Sale and marketing in gems and jewelry organizations

Semester periods

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

Applicant Qualifications

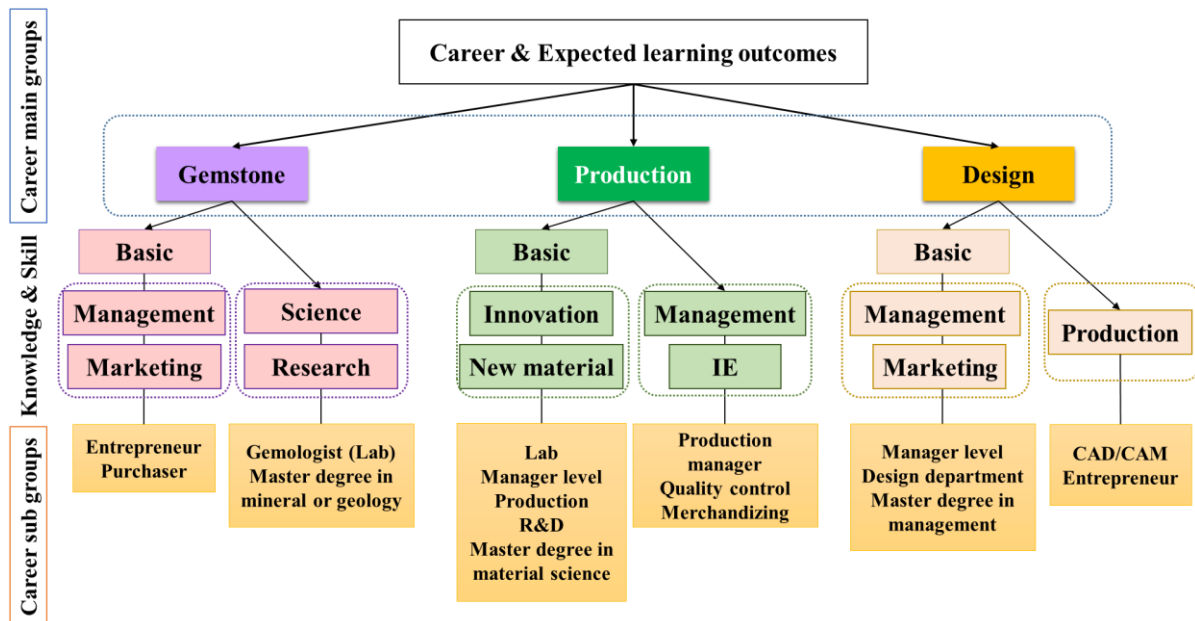
1. Both Thais and international students with the following qualifications:

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

Student Admission Policies

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

Program Framework



ELOs 2019	Bloom's Taxonomy	Skills	
		Generic	Specific

1. Explain liberal art and science concepts to enhance career in creative industry			II understanding	✓	
2. Build coacher skills with ethics, honesty, punctuality, and respectfulness to others.			III applying	✓	
3. Apply knowledge with community culture with social responsibility mindset			III applying	✓	
4. Use management and collaborating skills to develop business			III applying	✓	
5. Analyze statistical information using digital technology tools and to present the results.			IV Analyzing	✓	
6. identify gems and jewelry using design, production and gemology concept equivalent to international level			II understanding		✓
6.1 Basic concept of design techniques for jewelry in production	6.2 Basic of Jewelry production in manufacturing	6.3 basic of gems identification	II understanding		
7. apply designs and produce gems and jewelry using both conventional and recent techniques / technology for manufacturing			III applying		✓
7.1 Apply design techniques for producing jewelry productively	7.2 Produce jewelry using both conventional and recent technology for manufacturing	7.3 Identify gemstone to use properly for commercial and trading	III applying		
8. Appraise appropriate technology for adding values to gems and jewelry commercial products.			V evaluating		✓
8.1 Predicting design and trend for jewelry production	8.2 Synthesis thinking system for materials innovation for manufacturing	8.3 Evaluate gemstone from origin with advanced techniques	V evaluating		
9. Develop a start-up company using creativities, innovation and entrepreneurial skills.			VI Creating		✓

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

Motto

Think-ability – ability to design the jewelry for industrial production

Do-ability – ability to appraise the quality and create the jewelry production process

Identify-ability – ability to analyze and appraise the quality of gems

Sell-ability – ability to manage the value addition of gems and jewelry goods

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

1. First year students can produce the jewelry or perform the gems cutting

1.1 Students can 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

or

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 can analyze and classify the types and quality of gems and be able to cut basic gems. This can be verified by the students passing the introductory certificate or its equivalent in gemology from a public or private institution or a committee that is approved by the program committee.

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

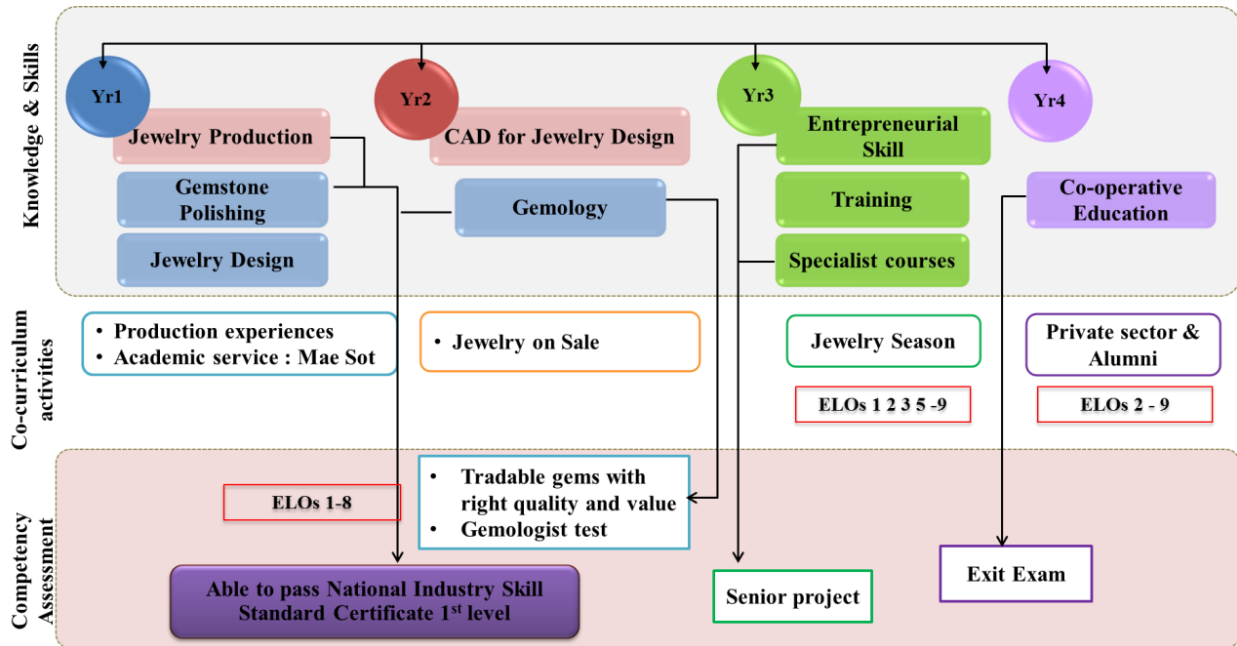


Figure 2 Year Competency Design

Study plan AY2019

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)
CCI Core courses	6 credits	CCI Core courses	7 credits
CCI101 Systematic Thinking and Mind Mapping*	1(1-0-2)	CCI102 Neo Material Technology	2(1-2-3)
CCI103 Industrial Aesthetics	2(0-4-2)	CCI104 Social Entrepreneurship*	2(1-2-3)
CCI106 Reading Skills for Creative Business*	3(2-2-5)	CCI105 Public Speaking*	3(2-2-5)
Compulsory specific courses	9 credits	Compulsory specific courses	8 credits
GJ131 Jewelry Design for Manufacturing	3(1-4-4)	GJ111 Introduction to Gemstone Cutting	2(0-4-2)
GJ151 Business Ethics and Social Responsibility	1(1-0-2)	GJ231 Computer-Aided Design for Jewelry I	2(0-4-2)
GJ191 Physics for Gems and Jewelry Industry	2(2-0-4)	GJ264 Jewelry Production in Manufacturing*	1(1-0-2)
GJ261 Jewelry Processing	1(1-0-2)	GJ265 Jewelry Production in Manufacturing Laboratory	3(0-6-3)
GJ262 Jewelry Processing Laboratory	1(0-2-1)		
GJ267 Industrial Safety in Jewelry Manufacturing	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	5 credits	General education courses	10 credits
SWU 252 Aesthetics for Life	3(3-0-6)	SWU137 Tennis	1(0-2-1)
SWU 258 Arts of Speaking and Presentation	2(2-0-4)	SWU141 Life in a Digital World	3(3-0-6)
		SWU 161 Human in Learning Society	2(2-0-4)
		SWU 243 Personal Financial Management	3(3-0-6)
		รายวิชาศึกษาทั่วไปเลือก อีก 1 credits	
CCI Core courses	3 credits		
CCI201 Business Writing and Communication*	3(2-2-5)		
Compulsory specific courses	12 credits	Compulsory specific courses	11 credits
GJ201 Knowledge Management for Gems and Jewelry	1(1-0-2)	GJ192 Chemistry for Gems and Jewelry Industry	2(2-0-4)
GJ232 Computer-Aided Design for Jewelry II	2(0-4-2)	GJ112 Gem Identification*	2(2-0-4)
GJ251 Introduction to Gems and Jewelry Business*	2(2-0-4)	GJ113 Gem Identification Laboratory I*	2(0-4-2)
GJ263 Master Mold	2(0-4-2)	GJ114 Gem Identification Laboratory II	2(0-4-2)
GJ266 Jewelry Prototype for Casting*	2(0-4-2)	GJ303 Pilot Research for Gems and Jewelry Production/Business	1(0-2-1)
GJ271 Materials for Gems and Jewelry Production	1(1-0-2)	GJ341 Entrepreneurship*	2(2-0-4)
GJ272 Materials for Gems and Jewelry Production Laboratory	2(0-4-2)		
Total number of credits	20 credits	Total number of credits	21 credits

Year 3 Semester 1	credits	Year 3 Semester 2	credits
General education courses	3 credits		
SWU 261 Active Citizens	3(3-0-6)		
CCI Core courses	3 credits		
CCI301 Social Psychology in Organization*	3(2-2-5)		
Compulsory specific courses	10 credits	Compulsory specific courses	7 credits
GJ115 Gem Identification Laboratory III	2(0-4-2)	GJ302 Seminar in Gems and Jewelry	2(0-4-2)
GJ301 Leadership and Human Resources Management*	2(0-4-2)	GJ305 Cooperative Education Preparation in Gems and Jewelry Industry	1(1-0-2)
GJ304 Internship in Gems and Jewelry	1(0-300-0)	GJ351 History of Gems and Jewelry Business	1(1-0-2)
GJ391 Mathematics for Gems and Jewelry Business	2(2-0-4)	GJ352 Economic and Manufacturing Cost Analysis*	2(2-0-4)
GJ392 Statistics for Data Science	3(2-2-5)	GJ361 Innovative Materials for Fashion Jewelry	1(0-2-1)
Elective specific courses	3 credits	Elective specific courses	9 credits
Elective specific courses no less than 3 credits		Elective specific courses no less than 9 credits	
		Free elective courses	3 credits
		Free elective course no less than 3 credits	
Total number of credits	19 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 courses	6 credits		
GJ401 Cooperative Education in Gems and Jewelry Industry I	6(0-18-0)		
		Free elective courses	3 credits
		Free elective course no less than 3 credits	
Total number of credits	6 credits	Total number of credits	3 credits

Courses delivered in English

The courses in the gems and jewelry program delivered in English comprise of the courses listed below (30 credits in total)

Core courses for creative industry 15 credits

CCI101	Systematic thinking and Mind Mapping*	1(1-0-2)
CCI104	Social Entrepreneurship*	2(1-2-3)
CCI105	Public Speaking*	3(2-2-5)
CCI106	Reading Skills for Creative Business*	3(2-2-5)
CCI201	Business Writing and Communication*	3(2-2-5)
CCI301	Social Psychology in Organization*	3(2-2-5)

Specific courses 15 credits

GJ112	Gem Identification*	2(2-0-4)
GJ113	Gem Identification Laboratory I*	2(0-4-2)
GJ251	Introduction to Gems and Jewelry Business*	2(2-0-4)
GJ264	Jewelry Production in Manufacturing*	1(1-0-2)
GJ266	Jewelry Prototype for Casting*	2(0-4-2)
GJ301	Leadership and Human Resources Management*	2(0-4-2)
GJ341	Entrepreneurship*	2(2-0-4)
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

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
CCI101	Systematic Thinking and Mind Mapping*	✓	✓		✓					
CCI102	Neo Material Technology	✓		✓	✓					
CCI103	Industrial Aesthetics	✓		✓	✓					
CCI104	Social Entrepreneurship*	✓		✓	✓	✓				
CCI105	Public Speaking*	✓	✓			✓				
CCI106	Reading Skills for Creative Business*	✓				✓				
CCI201	Business Writing and Communication*	✓				✓				
CCI301	Social Psychology in Organization*	✓	✓		✓					
2. วิชาเฉพาะ										
2.1 วิชาบังคับ										
2.1.1 วิชาบังคับทางด้านวิทยาศาสตร์										
GJ191	Physics for Gems and Jewelry Industry	✓				✓	6.2,6.3			
GJ192	Chemistry for Gems and Jewelry Industry	✓				✓	6.2,6.3			
GJ271	Materials for Gems and Jewelry Production	✓			✓	✓	6.2,6.3			
GJ272	Materials for Gems and Jewelry Production Laboratory	✓			✓	✓	6.2,6.3			
GJ361	Innovative Materials for Fashion Jewelry	✓			✓	✓	6.2,6.3		8.2	
GJ391	Mathematics for Gems and Jewelry Business	✓			✓	✓	6.1,6.2,6.3	7.1,7.2,7.3		
GJ392	Statistics for Data Science	✓			✓	✓	6.1,6.2,6.3	7.2		
2.1.2 วิชาบังคับทางด้านอัญมณี										
GJ111	Introduction to Gemstone Cutting		✓				6.2,6.3			
GJ112	Gem Identification*		✓				6.3			

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
GJ113	Gem Identification Laboratory I*		✓				6.3			
GJ114	Gem Identification Laboratory II		✓				6.3			
GJ115	Gem Identification Laboratory III		✓				6.3			
2.1.3 วิชาบังคับทางด้านการผลิต										
GJ261	Jewelry Processing				✓		6.2			
GJ262	Jewelry Processing Laboratory				✓		6.2			
GJ263	Master Mold			✓			6.2	7.1		
GJ264	Jewelry Production in Manufacturing*	✓				✓	6.2			
GJ265	Jewelry Production in Manufacturing Laboratory					✓	6.2			
GJ267	Industrial Safety in Jewelry Manufacturing		✓				6.2			
2.1.4 วิชาบังคับทางด้านการออกแบบ										
GJ131	Jewelry Design for Manufacturing	✓					6.1			
GJ231	Computer-Aided Design for Jewelry I		✓				6.1			
GJ232	Computer-Aided Design for Jewelry II			✓			6.1			
GJ266	Jewelry Prototype for Casting*	✓			✓	✓	6.3	7.1,7.2		
2.1.5 วิชาบังคับทางด้านการจัดการ										
GJ151	Business Ethics and Social Responsibility	✓	✓							
GJ251	Introduction to Gems and Jewelry Business*	✓			✓	✓	6.1,6.2,6.3			
GJ341	Entrepreneurship*				✓	✓	6.1,6.2,6.3			
GJ351	History of Gems and Jewelry Business	✓			✓		6.1,6.2,6.3	7.1,7.2,7.3		
GJ352	Economic and Manufacturing Cost Analysis*		✓			✓	6.1,6.2,6.3	7.1,7.2,7.3		

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
2.1.6 วิชาบังคับทางการเรียนรู้อุตสาหกรรม										
GJ201	Knowledge Management for Gems and Jewelry	✓	✓	✓	✓		6.1,6.2,6.3			
GJ301	Leadership and Human Resources Management*	✓	✓	✓	✓	✓		7.1,7.2,7.3		
GJ302	Seminar in Gems and Jewelry	✓	✓	✓		✓			8.1,8.2,8.3	✓
GJ303	Pilot Research for Gems and Jewelry Production/Business	✓	✓			✓	6.1,6.2,6.3	7.1,7.2,7.3		
GJ304	Internship in Gems and Jewelry	✓			✓	✓		7.1,7.2,7.3		
GJ305	Cooperative Education Preparation in Gems and Jewelry Industry	✓			✓	✓		7.1,7.2,7.3		✓
GJ401	Cooperative Education in Gems and Jewelry Industry I	✓	✓	✓	✓	✓			8.1,8.2,8.4	✓
2.2 วิชาเลือก										
กลุ่มที่ 1 การวิเคราะห์อัญมณีและการเพิ่มมูลค่าอัญมณี										
GJ311	Advanced Gemstone Identification		✓					7.3	8.3	
GJ312	Gemstone Enhancement and Synthesis		✓					7.3	8.3	
GJ313	Physical Geology and Gemstone Deposits	✓	✓				6.3			
GJ314	Organic Gems		✓					7.3		
GJ315	Crystallography and Optical Properties	✓					6.3	7.3		
GJ316	Mineralogy	✓					6.3	7.3		
GJ402	Cooperative Education for Advanced Gem Identification	✓	✓	✓	✓	✓			8.3	✓
GJ411	Gemstone Appraisal		✓				6.2,6.3	7.3		✓
GJ412	Gemstone Characterization of Jewelry Production		✓				6.1,6.2,6.3	7.3	8.3	

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
กลุ่มที่ 2 ผู้ประกอบการธุรกิจอัญมณีและเครื่องประดับ										
GJ342	Young Entrepreneur in Luxury and Lifestyle Business		✓		✓	✓	6.1,6.2,6.3	7.1,7.2	8.1	✓
GJ343	Merchandizing in Jewelry Export Business			✓	✓	✓	6.1,6.2,6.3	7.1,7.2	8.1	✓
GJ344	Production Design and Management for Social Enterprise in Jewelry Business			✓	✓		6.1,6.2,6.3	7.1,7.2	8.1	✓
GJ345	Auspicious Materials				✓		6.1,6.2,6.3			✓
GJ353	Retail Business		✓	✓	✓	✓	6.1,6.2,6.3			
GJ451	Creativity of Business Development							7.1,7.2,7.3	8.1,8.2	✓
GJ452	Enterprise Resource Planning for Gems and Jewelry Manufacturing		✓	✓	✓	✓	6.1,6.2,6.3	7.1,7.2,7.3		
GJ453	Digital Business				✓	✓		7.1,7.2,7.3		✓
ECR302	English for Career Preparation II	✓	✓		✓					
กลุ่มที่ 3 การออกแบบเพื่อการผลิตเครื่องประดับ										
GJ331	Advanced Computer-Aided Design for Jewelry				✓			7.2	8.1	
GJ332	Advanced Computer-Aided Prototyping for Jewelry		✓				6.2	7.1,7.2	8.1	
GJ333	Advanced Jewelry Design for Award and Competition			✓				7.2		✓
GJ334	Inspiration and History for Designer			✓	✓		6.2		8.1	
GJ335	Antique Jewelry			✓			6.1,6.2,6.3	7.1		
GJ362	Materials Technology in Art			✓	✓		6.1,6.2,6.3	7.1		✓

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
GJ403	Cooperative Education for Advanced Gem Identification	✓	✓	✓	✓	✓			8.1	✓
GJ431	Emotional design	✓			✓	✓	6.2	7.1		✓
CPD111	Product Design Techniques*	✓			✓		6.2	7.1		
CPD112	Media Design Elements	✓			✓		6.1			
CPD261	Cultural Commodification	✓	✓	✓	✓		6.1			
FTA 213	Fashion History and Culture	✓			✓		6.1			
FTA 311	Fashion Styling*	✓			✓		6.1			
กลุ่มที่ 4 การผลิตเครื่องประดับและการจัดการโรงงาน										
GJ354	Gems and Jewelry Production Management	✓			✓	✓	6.1,6.2,6.3	7.2		✓
GJ355	Quality Control in Gems and Jewelry Manufacturing		✓		✓	✓		7.1,7.2,7.3		
GJ356	Productivity Improvement				✓			7.2		
GJ363	Jewelry Casting Technology	✓			✓	✓		7.2	8.2	
GJ364	Jewelry Setting			✓			6.2	7.2		
GJ365	Advanced Plating and Coating					✓	6.2	7.2		
GJ404	Cooperative Education for Jewelry Production Management	✓	✓	✓	✓	✓			8.2	✓
GJ461	Factory Management		✓		✓		6.1,6.2,6.3	7.2	✓	
GJ471	Metal Forming and Joining Technology for Jewelry	✓		✓		✓		7.2		
กลุ่มที่ 5 นวัตกรรมวัสดุสำหรับอัญมณีและเครื่องประดับ										
GJ371	Nano Materials for Jewelry Industry					✓		7.2,7.3	8.2,8.3	
GJ372	Materials Characterization for Jewelry					✓	6.1,6.2,6.3	7.2,7.3		

Courses		Expected Learning Outcome								
		1	2	3	4	5	6	7	8	9
GJ373	Advanced Materials for Jewelry Production	✓	✓		✓			7.2,7.3	8.2	✓
GJ374	Physical Metallurgy for Jewelry	✓		✓	✓		6.2,6.3	7.2,7.3	8.2	
GJ375	Mechanical Behavior of Materials	✓			✓		6.2,6.3	7.2		
GJ376	Polymer Materials for Jewelry	✓			✓		6.2	7.2		
GJ377	Ceramic Materials for Jewelry	✓			✓		6.2,6.3	7.2		
GJ378	Thermodynamics of Materials	✓			✓		6.2,6.3	7.2		
GJ405	Cooperative Education for Nano Innovation of Materials for Jewelry	✓	✓	✓	✓	✓			8.1,8.2	✓
GJ472	Physics Technology for Gems and Jewelry	✓			✓	✓			8.2,8.3	