珠宝学院

School of Gemology

宝石及材料工艺学专业培养方案

一、专业培养目标

以立德树人为根本目标，致力于培养德、智、体、美、劳全面发展的社会主义建设者和接班人，建构以宝石学为核心的宝石及材料工艺学特色专业。本专业围绕国家战略、社会发展和行业需要，面向宝玉石及相关材料行业的需求，培养具有扎实的自然科学知识，较好的人文社会科学知识，较强的计算机和外语等方面的应用能力，掌握宝石学及相关学科理论和研究方法的复合型专业人才。毕业生可在科研院所、学校、工矿企业等单位从事研究、教学、科技开发、生产管理、贸易和资产评估等方面工作。学生毕业后经过五年实际工作的锻炼，能够在相关生产单位和科研团队中具备胜任工程师或相应职称的专业技术能力和条件，成长为宝玉石及相关材料领域的高级专门人才。

（1）能将所学的矿物、岩石等自然科学和材料科学等专业知识应用于宝石及材料工艺学相关的科学研究、生产设计、产品评估和资源预测等领域。

（2）能够从事宝石及材料工艺学领域的设计、制造、研发和生产管理工作。能够及时更新对新产品和新工艺的认识，对宝石材料的各种性质及优化处理进行鉴定与识别，促进珠宝首饰用材料产品质量和技术的持续改进。经过 3-5 年实际工作锻炼，具备宝石及材料工艺领域工程师的基本素质，达到中级技术职称或相当水平，能够成为单位业务骨干，并能够胜任教学、技术鉴定、企业管理、科技开发等职位，表现出较强的职业竞争力。

（3）具有良好的人文素养和艺术修为、较高的职业道德素质和社会责任感。在工作实践中，能够兼顾工作成就与环境保护、可持续发展、安全、健康、法律法规、伦理、自然文化等诸多方面的要求；遵守职业规范及国家的法律与法规。

（4）具有国际化视野和跨文化交流与合作能力。面对全球社会、经济和技术变革，能够直面挑战，作为技术骨干或领导，与时俱进，通过团队协作，组织并实施创新和改进项目。

二、毕业要求

本专业学生经过四年学习，应获得以下专业知识和基本能力：

（1）工程知识：掌握从事与宝玉石及相关材料工作所需的数学、物理、化学等自然科学知识，具备解决与宝玉石资源相关复杂工程问题的基础理论知识、结晶学与矿物学、晶体光学、岩石学、矿床学等地球科学知识。

（2）问题分析：能够应用已学知识和基本原理，识别和表达科学问题，并掌握通过文献检索、查询中外文文献资料的基本方法，研究分析遇到的相关专业问题，以获得有效结论。

（3）设计 / 开发解决方案：掌握宝石及材料工艺学专业的基本原理和知识，掌握不同宝玉石品种的形成、分布规律；掌握不同的宝石合成与改善处理的基本工艺流程；能够设计针对宝玉石与相似材料的开发、加工、鉴别、评估等一系列复杂问题的解决方案，并能够在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化以及环境等因素。

（4）研究：能够基于宝石学、矿物学、岩石学、矿床学等基本地质学原理，并采用科学方法对与宝石及材料相关问题进行研究，包括设计实验、分析与解释数据、并通过分析得到合理有效的结论；初步具备撰写论文，参与学术交流的能力。

（5）使用现代工具：针对宝玉石及相似材料的鉴别、优化处理等复杂问题，能够开发、选择与使用相关技术、现代工程工具、信息技术工具和专业软件，进行相关的数据分析、模型建立及理论模拟等，并能够理解其局限性。

（6）工程与社会：能够基于工程相关背景知识对宝玉石资源及相关领域的具体问题进行合理分析，评价专业工程实践和复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

（7）环境和可持续发展：了解国家的可持续发展战略及环境保护的相关法律法规；在宝玉石

资源开发与利用相关的工程设计中，具有环境保护意识，并考虑开发利用可能对环境、社会可持续发展的影响。

（8）职业规范：具备强烈的爱国敬业精神和社会责任感、正确的人生观和价值观，良好的人文社会科学素养和珠宝职业道德；掌握有关珠宝玉石国家标准，熟悉行业标准或团体标准、国内外知识产权等方面的法律法规；能够在与宝玉石及材料相关的科学研究、商贸活动、工程管理中理解并遵守珠宝职业道德和规范，履行责任。

（9）个人和团队：能够理解团队的重要性以及各种角色的责任和义务，具备团队合作与协调的意识和能力，能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

（10）沟通：能够就复杂的宝玉石资源等工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。较熟练地掌握一门外语，具备一定的国际视野，能够开展国际交流与沟通。

（11）项目管理：理解并掌握工程管理原理与经济决策方法，并能在多学科环境中应用。

（12）终身学习：能够及时了解本专业的理论前沿、应用前景和最新发展动态，具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

三、主干学科

地质学、宝石学。

四、学制与学位

学制四年。学生修满规定的最低毕业学分，达到毕业要求后，授予工学学士学位。

五、核心课程

专业核心课程：现代测试技术、宝石加工工艺学、宝石鉴定原理和方法、有色宝石学、宝石矿床学、宝石包裹体、钻石学、珠宝评估、晶体生长与合成宝石、宝石改善。

实践课程：北戴河地质认识实习、专业实习、宝石加工实习、玉雕实习、宝石商贸实习、宝石鉴定综合实习等。

Undergraduate Program in Gemmology and Materials Technology

1. Academic Objectives

The educational philosophy of this major is aimed at fostering students by virtue, and cultivating socialist builders and successors with all-round development of morality, intelligence, physique, beauty and labor as the fundamental task, and constructing agemmology and material technology feature specialty with the gemmology as the core. This major is oriented by the requirement of our country and society, the demand of gem and related sectors.

After four-years' study, students should acquire solid knowledge of natural sciences, certain knowledge of humanities and social sciences, a strong processing capability of computer and foreign language, theories and research methods in gemmology and related subjects. They will be qualified for different positions, such as the research, teaching, technology development, production management, trading and asset appraisal, in fields of academic institutions, university, industrial and mining enterprises, etc. They should be qualified as engineers or have the corresponding titles, and will become senior specialists in gem and related material fields after five-years' training in their positions.

(1) Students will know how to use the knowledge they learned the natural science and specialty to research and design gemmology and material technology. They could give corresponding solution to settle the gemmological-mineralogical questions, assessing and predicting in the assessment.

(2) Students will be qualified for the design, manufacture, research and management in the field of gemmology and material technology. They could update the knowledge of new product and technology to identify the characteristic and enhancement/treatment of different gem materials. After three to five years' work, they can be engineers in the gemmology and material technology field. Students will be the business backbone, show stronger professional competition, and be competent in teaching, technical identification, business management, etc.

(3) Students should have good humanities and art culture, better professional ethics and social responsibility. They can give consideration to many aspects, such as achievement, environmental protection, sustainable development, safety, healthy, laws and regulations, ethics and natural culture. They are expected to comply with professional standards, and national laws and regulations.

(4) Students should have international vision and the ability to communicate and cooperate in cross-cultural areas. When the global social, economic, and technological change happens, they could face the challenge to cooperate with team, organize and conduct innovation and improvement in the project, as the business backbone or leader.

2. Graduation Requirements

After four-years' studying, the students should acquire the following knowledge and abilities:

(1) Engineering knowledge: Students will master the basic natural science knowledge in mathematics, physics, chemistry. They will possess the basic theoretical knowledge for resolving the complex engineering problems, and the basic professional knowledge for resolving the gem resources questions, such as crystallography and mineralogy, crystal optics, petrology, economic geology, earth sciences, etc.

(2) Problem analysis: Students will be able to identify and describe scientific questions by applying the prior knowledge and basic principle. They will know how to analyze the professional problems and obtain the effective conclusions by data queries and literature searches.

(3) Designing and developing solutions: Students will grasp the basic theory and knowledge

of gemmology and material technology, the formation and distribution of different gems, the basic technological procedures of different synthesis and treatment methods. They are expected to have the ability to design the solutions for tackling more complicated projects, such as the exploitation, processing, identifying and assessing the gems and related materials. They should incarnate the sense of innovative consciousness and consider influence factors from society, health, safety, law, culture and environment in their design part.

(4) Research: Based on the basic principles of geology, students will apply scientific methods and carry out research on relevant problems of gems and related materials, which includes designing experiments, analyzing and interpreting data, and drawing reasonable and effective conclusions through information integration. They will gain the initial ability of writing papers and participating in academic meetings.

(5) Using modern tools: Students will have the ability to develop, select and use appropriate technology, modern engineering tools and informational technology to solve complex problems of identifying natural gems from enhancement/treated gems/materials. They should be able to do related data analysis, model building, and theoretical simulation. They should understand their limitations.

(6) Engineering and society: Students will make reasonable analysis based on engineering related background knowledge and rationally analyze questions in gem resources and related areas. They will evaluate the effects of engineering practice and the solution of complex engineering questions on society, health, safety, law, and culture, and understand relevant responsibilities.

(7) Environment and sustainable development: Students will understand the national sustainable development strategy, and relevant environmental protection laws and regulations. They will develop the sense of environment protection in related engineering designs, and will take sustainable development of environment and society into account when designing engineering projects and carrying on the designs.

(8) Career Development: Students should have strong sense of patriotism and social responsibility, right philosophy on life and value, good humanities and social sciences and jewelry professional ethics. They will master the national standard/GB of gems, be familiar of industry standards or group standards, laws and regulations of intellectual property rights. They should be able to understand, abide professional ethics and exercise responsibility during their practice, trading and engineering activity of gem and related material areas.

(9) Individuals and teams: Students will get to know the importance of teamwork as well as responsibilities and obligations of various roles through participating in practices. Teachers will train students' awareness of team cooperation and coordination. Students will be able to assume corresponding responsibilities as required in a team with multi-disciplinary backgrounds.

(10) Communication: Students will have the ability to communicate effectively with their counterparts and the public about the complex gem resources engineering problems, through writing papers and reports, delivering speeches at conferences, articulating clearly or response sequences. They should be skilled to master a foreign language, develop certain international visions, and be able to conduct international exchange and communication.

(11) Project management: Students will understand and master principles of engineering management and will be able to apply the principles in multi-disciplinary fields.

(12) Lifelong learning: Students will have the awareness of autonomous, lifelong learning and will have the ability to learn continuously to adapt to the development.

3. Main disciplines

Geology, Gemmology.

4. Length of Schooling and Degree

The length of schooling is four years of full-time study. Students will be awarded the Bachelor Degree of Engineering when they have completed the required minimum credits and have met all other requirements.

5. Core Courses

Specialized Core Courses: Modern Techniques for Materials, Gemstone Cutting Technology, Theories and Methods of Gem Identification, Colored Gemmology, Gemmological Deposit, Inclusions of Gemstones, Diamond, Gem Appraising, Crystal Growth and Synthetic Gemstone, Gemstone Enhancement, Specialty English for Gemology.

Practice Courses: Geological Survey Field Trip in Beidaihe, Specialty Practice, Gemstone Cutting Practice, Jade Carving Practice, Gem Trade Practice, Complex Practice of Gemmological Indentification.

六、最低毕业总学分要求及学分分配 (Minimum Required Credits and Distribution)

课程模块 Course module	课程类别 Course Classification	学时数 Hours	学分 Credits	学 期 Semester										
				1	2	1 夏	3	4	2 夏	5	6	3 夏	7	8
通识教育 Liberal Education	通识教育必修课程 Required Courses of General Education	730	40	11.25	13.25		5.25	5.25		3.25	1.25		0.25	0.25
	通识教育选修课程 Selective Courses of General Education	192	12											
专业教育 Professional Education	学科基础课程 Disciplinary Fundamental Courses	912	57	9	12		13	9		8	2		4	
	专业核心课程 Specialized Fundamental Courses	472	29.5					7		9.5	10		3	
	专业拓展课程 Specialized Development	144	9				2			1	2		4	
实践教育 Practical Education	课程实践 Course Practice	28 周 +128 学时	27		3	4	3		6			6		6
	课外实践 Extracurricular practice		6											
必修课总学分 Required course credits				153.5										
选修课总学分 Elective course credits				27										
最低毕业总学分 Total Credits				180.5										

七、课程设置 (Curriculum)

1、通识教育必修课程 (Required Courses of General Education)：730 学时 (730 Hours)，40 学分 (40 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR181009	思想道德与法治 Ideological Morality and Rule of Law	48	3	40	8		考试 Exam	1	
GR181008	中国近现代史纲要 Essentials of Modern Chinese History	48	3	40	8		考试 Exam	2	
GR182014	马克思主义基本原理 Fundamental Principles of Marxism	48	3	40	8		考试 Exam	3	
GR182024	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thoughts and Theoretical System of the Chinese Characteristic Socialism	32	2	32			考试 Exam	4	
GR182022	习近平新时代中国特色社会主义思想概论 Introduction to Xi Jinping Thoughts on Socialism with Chinese Characteristics in the New Era	48	3	48			考试 Exam	5	
GR181013	形势与政策（1） Situation and Policy (1)	4	0.25	4			考查 Term Paper	1	
GR181014	形势与政策（2） Situation and Policy (2)	4	0.25	4			考查 Term Paper	2	
GR181015	形势与政策（3） Situation and Policy (3)	4	0.25	4			考查 Term Paper	3	
GR181016	形势与政策（4） Situation and Policy (4)	4	0.25	4			考查 Term Paper	4	
GR181017	形势与政策（5） Situation and Policy (5)	4	0.25	4			考查 Term Paper	5	
GR181018	形势与政策（6） Situation and Policy (6)	4	0.25	4			考查 Term Paper	6	
GR181019	形势与政策（7） Situation and Policy (7)	4	0.25	4			考查 Term Paper	7	
GR181020	形势与政策（8） Situation and Policy (8)	4	0.25	4			考查 Term Paper	8	

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR301004	大学生职业生涯规划与就业指导（1） Career Planning and Employment Guidance for University Students (1)	20	1	16	4		考试 Exam	2	
GR303005	大学生职业生涯规划与就业指导（2） Career Planning and Employment Guidance for University Students (2)	18	1	12	6		考试 Exam	6	
GR301005	大学生心理素质教育（1） Mental Health (1)	16	1	16			考查 Term Paper	1	
GR303006	大学生心理素质教育（2） Mental Health (2)	16	1	16			考查 Term Paper	5	
GR302008	军事理论 Military Theory	36	1	36			考试 Exam	3	
GR081071	大学英语（1） College English (1)	64	4	64			考试 Exam	1	
GR081072	大学英语（2） College English (2)	32	2	32			考试 Exam	2	
GR081067	大学英语素质拓展课 Competence-oriented Education for College English	32	2	32			考试 Exam	2	
GR141005	体育（1）（系列课程） Physical Education (1)	32	1		32		考试 Exam	1	
GR141006	体育（2）（系列课程） Physical Education(2)	32	1		32		考试 Exam	2	
GR142007	体育（3）（系列课程） Physical Education(3)	32	1		32		考试 Exam	3	
GR142008	体育（4）（系列课程） Physical Education (4)	32	1		32		考试 Exam	4	
GR041001	大学计算机 College Computer	32	2	16	16		考试 Exam	1	
GR041004	Visual Basic 程序设计 Visual Basic programming	64	4	32	32		考试 Exam	2	
总计 Total		746	41	520	226				

2、**通识教育选修** (Selective Courses of General Education)：192 **学时** (192Hours)，12 **学分** (12 Credits)

序号 No.	课程类别 Courses Classification	课程名称 Courses Name	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
1	人文社科类（含在线课程） Humanities and Social Sciences Courses (Inc. Online courses)	见附件 1	7	考查 Term Paper	2-8	4 个类别中选修 7 个学分，其中，《大学生安全教育》（1 学分）必选。
2	自然科学类（含在线课程） Natural Science Courses (Inc. Online Courses)	见附件 2		考查 Term Paper	2-8	
3	自然文化类 Natural Culture Courses	见附件 3		考查 Term Paper	2-8	
4	体育与健康类 Sports and Health Courses	见附件 4		考查 Term Paper	5-8	
5	创新创业教育类（含在线课程） Innovation and Entrepreneurship Courses (Inc. Online Courses)	见附件 5、6	3	考查 Term Paper	2-8	选修 3 个学分，其中《新生研讨课》（1 学分）必选。
6	审美与艺术类 Aesthetics and Art Courses	见附件 7	2	考查 Term Paper	2-4	
总计 Total			12			

3、学科基础课程 (Disciplinary Fundamental Courses)：912 学时 (912 Hours)，57 学分 (57 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR191003	高等数学 B（1） Advanced Mathematics B (1)	96	6	96			考试 Exam	1	
DR191004	高等数学 B（2） Advanced Mathematics B (2)	64	4	64			考试 Exam	2	
DR192005	线性代数 Linear Algebra	32	2	32			考试 Exam	3	
DR192006	概率论与数理统计 Probability and Mathematics Statistic	48	3	48			考试 Exam	4	
DR191008	大学物理（1） College Physics (1)	48	3	48			考试 Exam	2	
DR192009	大学物理（2） College Physics (2)	48	3	48			考试 Exam	3	
DR191010	大学化学 College Chemistry	48	3	48			考试 Exam	1	
DR192017	物理化学 B Physical Chemistry B	48	3	48			考试 Exam	3	
DR012062	结晶学与矿物学 Crystallography and Mineralogy	80	5	40	40		考试 Exam	3	

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR011036	地球科学概论 Geosciences	64	4	32	32		考试 Exam	2	
DR012072	岩石学（含晶体光学） Petrology (Inc. Crystal Optics)	96	6	48	48		考试 Exam	4	
SR033007	无机材料工艺学 Inorganic Materials Technology	48	3	48			考试 Exam	5	
DR093036	珠宝商贸 Jewellery Trading	32	2	16	16		考查 Term Paper	6	
SR094046	宝石学专业英语 Specialty English for Gemmology	32	2	32			考试 Exam	7	
DR090029	宝石及材料工艺学专业导论 Introduction to Gemmology and Material Technology	16	1	8	8		考查 Term Paper	2	
DR093035	中国玉器概论 Introduction of China Jade	48	3	28	20		考查 Term Paper	5	
DR094037	观赏石 Ornamental Stone	32	2	32			考试 Exam	7	
DR093101	珠宝玉石材料学基础 Fundamentals of Materials Science for Gemstone	32	2	32			考试 Exam	5	
总计 Total		912	57	748	164				

4、**专业核心课程** (Core Professional Courses)：472 **学时** (472 Hours)，29.5 **学分** (29.5 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR032004	现代测试技术 Modern Techniques for Materials Characterization	40	2.5	26	14		考试 Exam	4	
DR092032	宝石加工学 Gemstone Cutting Technology	32	2	12	20		考试 Exam	4	
SR092038	宝石鉴定原理和方法 Theories and Methods of Gem Identification	40	2.5	20	20		考试 Exam	4	
SR093039	有色宝石学 Colored Gemmology	80	5	40	40		考试 Exam	5	
SR093040	宝石矿床学 Gemmological Deposit	40	2.5	36	4		考试 Exam	5	
SR093041	宝石包裹体 Inclusions of Gemstones	32	2	16	16		考试 Exam	5	
SR093052	钻石学 Diamond	80	5	32	48		考试 Exam	6	
SR093043	珠宝评估 Gem Appraising	32	2	32			考试 Exam	6	
SR094044	晶体生长与合成宝石 Crystal Growth and Synthetic Gemstone	48	3	32	16		考试 Exam	6	
SR094045	宝石改善 Gemstone Enhancement	48	3	32	16		考试 Exam	7	
总计 Total		472	29.5	278	194				

5、**专业拓展课程** (Specialized Development Courses)：144 **学时** (144 Hours)，9 **学分** (9 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SS091102	珠宝首饰表现技法 B Drawing Method of Jewelry B	32	2	12	20		考查 Term Paper	6	
SS092103	珠宝首饰设计基础 B Jewelry Design Fundamentals B	32	2	12	20		考查 Term Paper	7	
SS092104	贵金属材料概论 Precious Metallic Materials	32	2	24	8		考试 Exam	3	
SS090089	宝石矿物科学进展 Progress of Gemstones and Related Minerals	16	1	14	2		考查 Term Paper	5	
SS094105	宝石学大型仪器应用与实践 Application and Practice of Modern Testing Instruments in Gemmology	32	2	16	16		考试 Exam	7	
总计 Total		144	9	78	66				

6、**课程实践** (Practice Course)：28 **周** +128 **学时** (28 weeks and 128 hours)，27 **学分** (27 Credits)

课程代码 Course Code	课程名称 Course Name	周数（学时） Week(hour)	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
PR311003	军事技能训练 Military Theory and Practice	2 周	1	考查 Term Paper	1	
PR181010	思想政治社会实践 Political Social Practice	32 学时	2	考查 Term Paper	1 夏	
PR011044	北戴河地质认识实习 Geological Survey Field Trip in Beidaihe	2 周	2	考查 Term Paper	1 夏	
PR191045	实验物理（1） Physics Experiments (1)	24 学时	1	考试 Exam	2	
PR192046	实验物理（2） Physics Experiments (2)	24 学时	1	考试 Exam	3	

课程代码 Course Code	课程名称 Course Name	周数（学时） Week(hour)	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
PR191047	实验化学 Chemistry Experiments	48 学时	2	考试 Exam	2	
PR092047	专业实习 Specialty Practice	2 周	2	考查 Term Paper	2 夏	
PR092048	宝石加工实习 Gemstone Cutting Practice	4 周	4	考查 Term Paper	2 夏	
PR093049	玉雕实习 Jadeware Carving Practice	1 周	1	考查 Term Paper	3 夏	
PR093050	宝石商贸实习 Gem Trade Practice	3 周	3	考查 Term Paper	3 夏	
PR093051	宝石鉴定综合实习 Complex Practice of Gemmological Identification	2 周	2	考试 Exam	3 夏	
PR094052	毕业设计（论文） Graduation Design (Thesis)	12 周	6	考查 Term Paper	8	
总计 Total		128 学时 +28 周	27			

7、**课外实践** (Extracurricular practice)：6 **学分** (6 Credits)

包括主题教育活动、社会实践、志愿服务、勤工助学、学科竞赛、文体活动、创新创业活动、劳动实践等，其学分的认定按照教务处相关规定执行。

Extracurricular practice include Theme Education, Social Practice, Volunteer Service, Work-study Program, Discipline Competition, Cultural and Sports Activities, Innovative and Entrepreneurial Activities, Labor Practice and so on. The recognition of the credits for extracurricular practice shall be implemented according to the regulations of Academic Affairs Office.

八、毕业要求与培养目标矩阵（工程教育认证类专业）

毕业要求	培养目标			
	目标 1	目标 2	目标 3	目标 4
毕业要求 1	√	√		
毕业要求 2	√	√		√
毕业要求 3	√	√		√
毕业要求 4	√	√		√
毕业要求 5	√	√		√
毕业要求 6			√	√
毕业要求 7			√	√
毕业要求 8			√	√
毕业要求 9				√
毕业要求 10		√	√	√
毕业要求 11			√	√
毕业要求 12	√	√		√

九、课程与毕业要求关系矩阵（工程教育认证类专业参考）

课程名称 \ 毕业要求	(1) 工程知识	(2) 问题分析	(3) 设计／开发解决方案	(4) 研究	(5) 使用现代工具	(6) 工程与社会	(7) 环境和可持续发展	(8) 职业规范	(9) 个人和团队	(10) 沟通	(11) 项目管理	(12) 终身学习
思想道德与法治						H	L	H		L		
毛泽东思想和中国特色社会主义理论体系概论							M	H				
中国近现代史纲要								M				
马克思主义基本原理								H			L	M
习近平新时代中国特色社会主义思想概论								M			H	
形式与政策							M	M				M
大学生心理素质教育 (1)(2)										L		L
大学生职业生涯规划与就业指导（1）（2）									M			M
体育 (1)(2)(3)(4)									H			H
军事理论									H			
军事技能训练		H	L						H	H		
思想政治社会实践						H			M			L
北戴河地质认知实习		H	L	H	L	L	M		H	H	L	
实验物理 (1)(2)	H	H		H					L	M		
实验化学	L	M							L	M		
大学英语 (1)(2)	L	L								H		H
大学英语素质拓展课	L	L			H					H		H
大学计算机					H						M	M
Visual Basic 程序设计		M	M		M							H
高等数学 B(1)(2)	H	M		L								
线性代数	M	H		L								
大学物理 (1)(2)	H	M	M	H								
大学化学	H	M	M	H								
物理化学 B	H	M	M	H								
中国玉器概论			L			M	M	H				

毕业要求 课程名称	(1) 工程知识	(2) 问题分析	(3) 设计／开发解决方案	(4) 研究	(5) 使用现代工具	(6) 工程与社会	(7) 环境和可持续发展	(8) 职业规范	(9) 个人和团队	(10) 沟通	(11) 项目管理	(12) 终身学习
观赏石					L	L				M		L
人文社科类课程						M		H				
自然科学类课程	H	H										
宝石与材料工艺学专业导论			L				L	H	M			
概率论与数理统计	H	H		L								
地球科学概论					L	M	H					
结晶学与矿物学		M		H	H							
岩石学（含晶体光学）		M		H	H							
无机材料工艺学			L			M						
宝石加工学			M									
珠宝玉石材料学基础		M	L	M								
珠宝商贸						L		M	M	M	L	H
宝石学专业英语				H						M		H
现代测试技术		H	H	H	H							
宝石鉴定原理和方法		H	H	H	H			M				M
有色宝石学		H	H	H								
宝石矿床学	L				M	M	H					
宝石包裹体		H	M	H	H							
钻石学		H			M			H		M		
珠宝评估				L		H	M	H			H	M
晶体生长与合成宝石		H	H	H	M			H				M
宝石改善		L		M	H			H				M
珠宝首饰表现技法 B	L		L					M				
珠宝首饰设计基础 B			M									
贵金属材料概论	M					M	H				L	
宝石矿物科学前沿课	L	L	M	H	H							H
宝石学大型仪器应用与实践		H	H	H	H							H
教学实习								H	M	H		H
宝石加工实习		H	H		M	M		M	H	L		

毕业要求 / 课程名称	(1) 工程知识	(2) 问题分析	(3) 设计／开发解决方案	(4) 研究	(5) 使用现代工具	(6) 工程与社会	(7) 环境和可持续发展	(8) 职业规范	(9) 个人和团队	(10) 沟通	(11) 项目管理	(12) 终身学习
宝石加工实习		H	H		M	M		M	H	L		
玉雕实习			H		H			H	M	M		
宝石商贸实习			M	L	M			H	H	H	L	H
宝石鉴定综合实习		H	H	H	H			H			L	L
毕业设计（论文）		H	H	H	H			M	M	H		L

注：H 表示课程对毕业要求指标支撑度高；M 表示课程对毕业要求指标支撑度中等；L 表示课程对毕业要求指标支撑度低。

产品设计专业培养方案

一、专业培养目标

以立德树人为目标，培养德、智、体、美、劳全面发展的社会主义建设者和接班人为根本任务，形成具有思维创新、艺术鲜明、技能完善、学术先进、商业明确复合型创新的人才体系。建构以珠宝首饰设计为核心的产品设计专业。本专业是以设计艺术与宝石学相结合的交叉学科，围绕着文化、技术、设计、珠宝时尚、科技与市场等要素建构课程体系，通过全面兼顾学术、技术、艺术的教学理念，培养基础扎实、诚实守信、具备良好的专业素养、职业道德、身心健康的珠宝首饰设计领域的高级人才，既能服务于珠宝产业，又能够适应新时代发展要求，懂学术、能技术、精艺术的复合型创新珠宝人才。

二、毕业要求

毕业生应获得以下几方面的专业知识和能力：

（1）具有良好的珠宝职业道德、坚定的追求卓越的态度、强烈的爱国敬业精神、社会责任感和丰富的人文科学素养；

（2）了解珠宝玉石的基本性质、鉴定方法、宝石加工、贸易和评估等方面的基本原理、专业知识和专业技术能力；

（3）通过系统学习艺术造型、时尚制作、图案构成、珠宝首饰设计、工艺制作等课程，掌握珠宝首饰设计、制作加工的基本专业素质和技能；

（4）熟悉有关珠宝首饰设计师审评要求，珠宝玉石国家标准，国内外知识产权等方面的法律法规；

（5）了解本专业的的理论前沿、应用前景和最新发展动态及产业的发展状况。

三、主干学科

艺术学、设计学。

四、学制与学位

学制四年。学生修满规定的最低毕业学分，达到毕业要求后，被授予艺术学学士学位。

五、核心课程

核心课程由四部分课程群构成：珠宝首饰设计创意类课程；表现技法类课程；首饰制作工艺技能类课程；珠宝材料认知类课程。

实践课程：艺术设计采风、工艺实践、市场调研、毕业设计等。

Undergraduate Program in Product Design

1. Academic Objectives

The educational philosophy of this major is aimed at fostering people by virtue, and cultivating socialist builders and successors with all-round development of morality, intelligence, physique, beauty and labor as the fundamental task, and constructing a product design major with jewelry design as the core. This major is a cross-discipline that combines design art and gemology. It builds a curriculum system around culture, technology, design, jewelry fashion, technology and market, etc., and cultivates jewelry through a comprehensive consideration of academic, technical, and artistic teaching concepts Senior talents in the design field form a talent system with innovative thinking, distinctive art, perfect skills, advanced academics, and clear commercial innovation. Cultivate compound innovative jewelry talents who have a solid foundation, are honest and trustworthy, have good professionalism, professional ethics, physical and mental health, can serve the jewelry industry, and can adapt to the development requirements of the new era.

2. Graduation Requirements

Graduates should acquire the following professional knowledge and abilities:

(1) Have a good jewelry professional ethics, a firm attitude of pursuing excellence, a strong patriotism and professionalism, a sense of social responsibility and rich humanities and science literacy;

(2) Understand the basic properties, identification methods, gem processing, trade and evaluation of the basic principles, professional knowledge and professional technical capabilities of jewellery and jade;

(3) Through systematic learning of art modeling, fashion making, pattern composition, jewelry design, craft making and other courses, master the basic professional qualities and skills of jewelry design, making and processing;

(4) Familiar with the relevant laws and regulations concerning the evaluation requirements of jewelry designers, national standards for jewelry and jade, and domestic and foreign intellectual property rights;

(5) Understand the theoretical frontier, application prospects, latest development trends and industry development status of this major.

3. Main disciplines

Art and Design.

4. Length of Schooling and Degree

The length of schooling is four years of full-time study. Students will be awarded the Bachelor Degree of Arts when they have completed the required minimum credits and have met all other requirements.

5. Core Courses

The core curriculum consists of four parts: jewelry design and creativity courses; performance techniques courses; jewelry making craftsmanship skills courses; jewelry material cognition courses.

The main practical teaching links: art design collection, craft practice, market research, graduation design, etc.

六、最低毕业总学分要求及学分分配 (Minimum Required Credits and Distribution)

课程模块 Course module	课程类别 Course Classification	学时数 Hours	学分 Credits	学 期 Semester											
				1	2	1 夏	3	4	2 夏	5	6	3 夏	7	8
通识教育 Liberal Education	通识教育必修课程 Required Courses of General Education	634	34	9.25	11.25	1	4.25	5.25		3.25	1.25		0.25	0.25
	通识教育选修课程 Selective Courses of General Education	192	12											
专业教育 Professional Education	学科基础课程 Disciplinary Fundamental Courses	672	42	9	7		5	5		9	7			
	专业核心课程 Specialized Fundamental Courses	504	31.5		7		3	7		7	8			
	专业拓展课程 Specialized Development	160	10		3		3	3					1	
实践教育 Practical Education	课程实践 Course Practice	21 周 +32 学时	15			5			1			4		5
	课外实践 Extracurricular practice		6											
必修课总学分 Required course credits				121.5										
选修课总学分 Elective course credits				12										
最低毕业总学分 Total Credits				149.5										

七、课程设置 (Curriculum)

1、通识教育必修课程 (Required Courses of General Education)：634 学时 (634 Hours)，34 学分 (34 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR181009	思想道德与法治 Ideological Morality and Rule of Law	48	3	40	8		考试 Exam	1	
GR181008	中国近现代史纲要 Essentials of Modern Chinese History	48	3	40	8		考试 Exam	2	
GR182014	马克思主义基本原理 Fundamental Principles of Marxism	48	3	40	8		考试 Exam	3	
GR182024	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thoughts and Theoretical System of the Chinese Characteristic Socialism	32	2	32			考试 Exam	4	
GR182022	习近平新时代中国特色社会主义思想概论 Introduction to Xi Jinping Thoughts on Socialism with Chinese Characteristics in the New Era	48	3	48			考试 Exam	5	
GR181013	形势与政策（1） Situation and Policy（1）	4	0.25	4			考查 Term Paper	1	
GR181014	形势与政策（2） Situation and Policy（2）	4	0.25	4			考查 Term Paper	2	
GR181015	形势与政策（3） Situation and Policy（3）	4	0.25	4			考查 Term Paper	3	
GR181016	形势与政策（4） Situation and Policy（4）	4	0.25	4			考查 Term Paper	4	
GR181017	形势与政策（5） Situation and Policy（5）	4	0.25	4			考查 Term Paper	5	
GR181018	形势与政策（6） Situation and Policy（6）	4	0.25	4			考查 Term Paper	6	
GR181019	形势与政策（7） Situation and Policy（7）	4	0.25	4			考查 Term Paper	7	
GR181020	形势与政策（8） Situation and Policy（8）	4	0.25	4			考查 Term Paper	8	

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
GR301004	大学生职业生涯规划与就业指导（1） Career Planning and Employment Guidance for University Students (1)	20	1	16	4		考试 Exam	2	
GR303005	大学生职业生涯规划与就业指导（2） Career Planning and Employment Guidance for University Students (2)	18	1	12	6		考试 Exam	6	
GR301005	大学生心理素质教育（1） Mental Health (1)	16	1	16			考查 Term Paper	1	
GR303006	大学生心理素质教育（2） Mental Health (2)	16	1	16			考查 Term Paper	5	
GR302008	军事理论 Military Theory	36	1	36			考试 Exam	3	
GR081071	大学英语（1） College English (1)	64	4	64			考试 Exam	1	
GR081072	大学英语（2） College English (2)	32	2	32			考试 Exam	2	
GR081067	大学英语素质拓展课 Competence-oriented Education for College English	32	2	32			考试 Exam	2	
GR141005	体育（1）（系列课程） Physical Education (1)	32	1		32		考试 Exam	1	
GR141006	体育（2）（系列课程） Physical Education(2)	32	1		32		考试 Exam	2	
GR141007	体育（3）（系列课程） Physical Education(3)	32	1		32		考试 Exam	3	
GR141008	体育（4）（系列课程） Physical Education (4)	32	1		32		考试 Exam	4	
总计 Total		634	34	452	182				

2、**通识教育选修** (Selective Courses of General Education)：192 **学时** (192Hours)，12 **学分** (12 Credits)

序号 No.	课程类别 Courses Classification	课程名称 Courses Name	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
1	人文社科类（含在线课程） Humanities and Social Sciences Courses (Inc. Online courses)	见附件 1	7	考查 Term Paper	2-8	4 个类别中选修 7 个学分，其中，《大学生安全教育》（1 学分）必选。
2	自然科学类（含在线课程） Natural Science Courses (Inc. Online Courses)	见附件 2		考查 Term Paper	2-8	
3	自然文化类 Natural Culture Courses	见附件 3		考查 Term Paper	2-8	
4	体育与健康类 Sports and Health Courses	见附件 4		考查 Term Paper	5-8	
5	创新创业教育类（含在线课程） Innovation and Entrepreneurship Courses (Inc. Online Courses)	见附件 5、6	3	考查 Term Paper	2-8	选修 3 个学分，其中《新生研讨课》（1 学分）必选。
6	审美与艺术类 Aesthetics and Art Courses	见附件 7	2	考查 Term Paper	2-7	
总计 Total			12			

3、**学科基础课程** (Disciplinary Fundamental Courses)：672 **学时**（672 Hours)，42 **学分** (42 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR091140	产品设计专业导论 Introduction to Product Design	16	1	16			考查 Term Paper	1	
DR092106	产品设计专业英语 Professional English for product Design	32	2	24	8		考试 Exam	4	
DR091009	工艺美术发展史 History of arts and Crafts	32	2	32			考试 Exam	2	
DR091008	设计概论与方法学 Introduction to Design and Methodology	48	3	28	20		考查 Term Paper	1	
DR091010	艺术设计与构成基础 Art Design and Composition Foundation	48	3	24	24		考查 Term Paper	1	
DR091110	珠宝玉石概论 Introduction to Gems and Jade	48	3	40	8		考试 Exam	2	
DR092111	珠宝首饰设计创意思维 Creative Thinking of Jewelry Design	32	2	28	4		考查 Term Paper	3	
DR092112	计算机辅助首饰设计 Computer Aided Jewelry Design	48	3	16	32		考查 Term Paper	4	
DR093113	钻石鉴定与评估 Diamond Identification and Evaluation	48	3	12	36		考试 Exam	6	
DR091114	金工手作基础工艺 Basic Process of Metalworking by Hand	64	4	4	60		考查 Term Paper	2	
PR092027	宝石加工工艺 Gemstone Cutting	32	2	8	24		考试 Exam	5	
DR092115	纹饰设计与应用 Decorative Design and Application	48	3	20	28		考查 Term Paper	2	
DR093116	珠宝首饰设计与无界限艺术创作 Jewelry Design and Unbounded Artistic Creation	32	2	8	24		考查 Term Paper	6	
DR093117	非物质文化遗产概论 Introduction to Intangible Cultural Heritage	32	2	32			考查 Term Paper	5	
DR093118	首饰发展史与鉴赏 History and Appreciation of Jewelry	48	3	32	16		考查 Term Paper	5	

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
DR093119	珠宝首饰品牌专题 Special Topics on Jewelry Brands	32	2	20	12		考查 Term Paper	6	
DR093120	首饰设计与色彩 Design and Color of Jewelry	32	2	28	4		考查 Term Paper	5	
总计 Total		672	42	428	228				

4、**专业核心课程** (Core Professional Courses)：504 **学时** （504 Hours)，31.5 **学分** (31.5 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SR091121	珠宝首饰表现技法 Jewelry Presentation Techniques	80	5	25	55		考查 Term Paper	2	
SR093122	首饰镶嵌工艺制作 Jewelry Inlay Craft Production	64	4	16	48		考查 Term Paper	6	
SR092123	珠宝首饰设计基础 Basics of Jewelry Design	48	3	28	20		考查 Term Paper	4	
SR091124	贵金属材料基础工艺与实践创作 Basic Technology and Practice of Precious Metal Materials	32	2	10	22		考查 Term Paper	2	
SR093125	花丝工艺实践与首饰制作 Fillgree Technology Practice and Jewelry Making	64	4	4	60		考查 Term Paper	5	
SR092126	金属首饰创意设计与实践 Creative Design and Practice of Metal Jewelry	64	4	8	56		考查 Term Paper	4	
SR092127	首饰蜡模实现途径与铸造 Ways to Realize Jewelry Wax Mold and Casting	48	3	8	40		考查 Term Paper	3	
SR093128	宝玉石雕刻工艺 Jade Crafts Carving	64	4	56	8		考查 Term Paper	6	
SR093129	金属錾刻工艺 Chasing	40	2.5	8	32		考查 Term Paper	5	
总计 Total		504	31.5	163	341				

5、**专业拓展课程** (Specialized Development Courses)：160 **学时** (160 Hours)，10 **学分** (10 Credits)

课程代码 Course Code	课程名称 Course Name	总学时 Hours	学分 Credits	讲课学时 Lecture	实验学时 Experiment	线上学时 Online	考核方式 Assessment	开课学期 Semester	备注 Notes
SS094130	产品设计前沿课程 Product Design Frontier Course	16	1	16			考查 Term Paper	7	
SS092131	时尚饰品设计与实践 Fashion Design and Practice	48	3	24	24		考查 Term Paper	4	
SS091132	首饰设计与方案 Jewelry Design and Scheme	48	3	30	18		考查 Term Paper	2	
SS092133	首饰材料研究 Research on Jewelry Materials	48	3	18	30		考查 Term Paper	3	
总计 Total		160	10	88	72				

6、**课程实践** (Practice Course)：21 **周** +32 **学时** (21 weeks and 32 hours)，15 **学分** (15 Credits)

课程代码 Course Code	课程名称 Course Name	周数（学时） Week(hour)	学分 Credits	考核方式 Assessment	开课学期 Semester	备注 Notes
PR311003	军事技能训练 Military Theory and Practice	2 周	1	考查 Term Paper	1	
PR181010	思想政治社会实践 Political Social Practice	32	2	考查 Term Paper	1 夏	
PR091024	专业采风 Practice of Art Design	2 周	2	考查 Term Paper	1 夏	
PR092025	市场调研 Investigation of Market	1 周	1	考查 Term Paper	2 夏	
PR093026	珠宝首饰艺术与工业考察 Investigation of Jewelry Manufacturing Technique and art	4 周	4	考查 Term Paper	3 夏	
PR094031	毕业设计 (论文) Graduation Design (Thesis)	12 周	5	考查 Term Paper	8	
总计 Total		21 周 +32 学时	15			

7、**课外实践** (Extracurricular practice)：6 **学分** (6 Credits)

包括主题教育活动、社会实践、志愿服务、勤工助学、学科竞赛、文体活动、创新创业活动、劳动实践等，其学分的认定按照教务处相关规定执行。

Extracurricular practice include Theme Education, Social Practice, Volunteer Service, Work-study Program, Discipline Competition, Cultural and Sports Activities, Innovative and Entrepreneurial Activities, Labor Practice and so on. The recognition of the credits for extracurricular practice shall be implemented according to the regulations of Academic Affairs Office.