资源勘查工程（新能源英才班）专业培养方案

专业名称与代码：资源勘查工程（新能源英才班）081403

专业培养目标：培养具有开阔的国际视野、扎实的专业知识体系、系统的工程训练、科学的思维方法以及创新意识，能从事新能源（页岩油气、致密油气、天然气水合物及地热等）科学研究与资源勘查的新工科人才。

预期本专业毕业生毕业后能进入更高层次的学习，或毕业后5年左右能够在社会及新能源勘查工程领域担任项目负责或业务骨干，并取得中级及以上职称。

专业毕业要求：

①工程知识：能够将数学、自然科学、工程基础和新能源勘查知识用于解决新能源勘查中复杂工程问题；

②问题分析：能够应用数学、自然科学和新能源勘查的基本原理，识别、表达、并通过文献研究分析新能源勘查中的复杂工程问题，以获得有效结论；

③设计/开发解决方案：能够设计针对新能源勘查中复杂工程问题的解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，并能在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化及环境等因素；

④研究：能够基于科学原理并采用科学方法对新能源勘查中复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论；

⑤使用现代工具：能够针对新能源勘查中的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性；

⑥工程与社会：能够基于新能源勘查工程相关背景知识进行合理分析，评价新能源勘查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：能够理解和评价针对新能源勘查中复杂工程问题的专业工程实践对环境、社会可持续发展的影响；

⑧职业规范：具有人文社会科学素养、社会责任感，能够在新能源勘查工程实践中理解并遵守工程职业道德和规范，履行责任；

⑨个人和团队：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：能够就新能源勘查中复杂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，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流；

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：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。

毕业要求实现及途径：

序号	毕业要求	实现途径（教学过程）
1	**工程知识：**能够将数学、自然科学、工程基础和新能源勘查知识用于解决新能源勘查中复杂工程问题。	**①课堂教学：**高等数学 B、概率论与数理统计 B、线性代数 B、大学物理 B、物理实验 B、大学化学 B、大学化学实验 B、普通地质学、测量学 A、结晶学及矿物学、晶体光学及光性矿物学、岩石学、地层及古生物学、构造地质学 A、岩石力学基础、水文地质学基础 B、石油及天然气地质学 A、沉积相与沉积环境、大地构造与能源、油气地球化学、地球物理原理与方法、油（气）层物理学、地球物理综合解释学、非常规油气地质学、地热地质学、非常规储层地质学、新能源勘查与评价、层序地层、地热工程学、非常规油气工程、细粒沉积学等； **②课外学习：**专题讲座、学术报告等。
2	**问题分析：**能够应用数学、自然科学和新能源勘查的基本原理，识别、表达、并通过文献研究分析新能源勘查中的复杂工程问题，以获得有效结论。	**①课堂教学：**测量教学实习 A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、沉积岩岩芯编录与相分析、新能源专业课程综合设计； **②课外学习：**课程作业、大学生科研立项、寻找李四光活动、生产实习、毕业设计（论文）、学科前沿调研报告、毕业答辩等。
3	**设计/开发解决方案：**能够设计针对新能源勘查中复杂工程问题的	**①课堂教学：**测量教学实习 A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教

序号	毕业要求	实现途径（教学过程）
	解决方案，设计满足特定需求的系统、单元（部件）或工艺流程，并能在设计环节中体现创新意识，考虑社会、健康、安全、法律、文化及环境等因素。	学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、沉积岩岩芯编录与相分析、新能源专业课程综合设计等； **②课外学习：**课程作业、大学生科研立项、寻找李四光活动、生产实习、毕业设计（论文）等。
4	**研究：**能够基于科学原理并采用科学方法对新能源勘查中复杂工程问题进行研究，包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。	**①课堂教学：**测量教学实习 A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、沉积岩岩芯编录与相分析、新能源专业课程综合设计、地球物理综合解释等； **②课外学习：**课程作业、大学生科研立项、寻找李四光活动、生产实习、毕业设计（论文）、学科前沿调研报告等。
5	**使用现代工具：**能够针对新能源勘查中的复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对复杂工程问题的预测与模拟，并能够理解其局限性。	**①课堂教学：**大学英语、C 语言程序设计 B、C 语言课程设计、专业英语、文献检索、页岩油气实验测试技术、沉积岩岩芯编录与相分析、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、新能源专业课程综合设计等； **②课外学习：**课程作业、大学生科研立项、专题讲座、生产实习、毕业设计（论文）、学科前沿调研报告等。
6	**工程与社会：**能够基于新能源勘查工程相关背景知识进行合理分析，评价新能源勘查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。	**①课堂教学：**资源导论、石油及天然气地质学 A、非常规油气地质学、非常规储层地质学、测量教学实习 A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、非常规油气工程等； **②课外学习：**课程作业、大学生科研立项、生

序号	毕业要求	实现途径（教学过程）
		产实习、毕业设计（论文）、专题讲座等；
7	**环境和可持续发展：**能够理解和评价针对新能源勘查中复杂工程问题的专业工程实践对环境、社会可持续发展的影响。	**①课堂教学：**能源经济学、环境保护和资源利用、测量教学实习A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）等； **②课外学习：**课程作业、大学生科研立项、生产实习、毕业设计（论文）、专题讲座等。
8	**职业规范：**具有人文社会科学素养、社会责任感，能够在新能源勘查工程实践中理解并遵守工程职业道德和规范，履行责任。	**①课堂教学：**马克思主义基本原理、毛泽东思想和中国特色社会主义体系概论、中国近现代史纲要、思想道德修养与法律基础、大学生心理健康教育、入学教育、考风教育、形势与政策教育、军事理论、就业指导、军训、毕业教育等； ②课外学习：大学生科研立项、生产实习、毕业设计（论文）、毕业答辩，寻找李四光活动，指南针讲座。
9	**个人和团队：**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。	**①课堂教学：**测量教学实习A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）等； **②课外学习：**课程作业、生产实习、毕业设计（论文）等。
10	**沟通：**能够就新能源勘查中复杂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，并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。	**①课堂教学：**专业英语、测量教学实习A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）等； **②课外学习：**课程作业、科技论文报告会、学术讲座、撰写科技论文、参加教师科研项目、生产实习、毕业设计（论文）等。
11	**项目管理：**理解并掌握工程管理	**①课堂教学：**经济管理类选修课、能源经济学、

序号	毕业要求	实现途径（教学过程）
	原理与经济决策方法，并能在多学科环境中应用。	测量学实习 A、地质教学实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）等； **②课外学习：**大学生科研立项、生产实习、毕业设计（论文）、参加教师科研项目等。
12	**终身学习：**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。	**①课堂教学：**思想道德修养与法律基础、马克思主义基本原理、文献检索等； **②课外学习：**课程作业、学科竞赛、社会调查、发明创造、科研报告、大学生科研立项等。

主干学科：地质资源与地质工程

专业核心课程：石油及天然气地质学、非常规油气地质学、沉积相与沉积环境、大地构造与能源、油气地球化学、非常规储层地质学、地球物理原理与方法、地球物理综合解释、油（气）层物理学、地热地质学、新能源勘查与评价

主要专业实验：常规与非常规油气地质实验、构造模拟实验、油气地球化学实验、沉积岩岩心编录与相分析、岩心及标本观察与描述、地球物理资料综合解释等。

主要实践性教学环节：地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、新能源专业课程综合设计、生产实习（页岩油气实习（江汉）、致密油气实习（江汉）、天然气水合物实习（广州海洋地质调查局）、地热资源实习（中石化新星湖北新能源公司））、毕业论文（设计）等

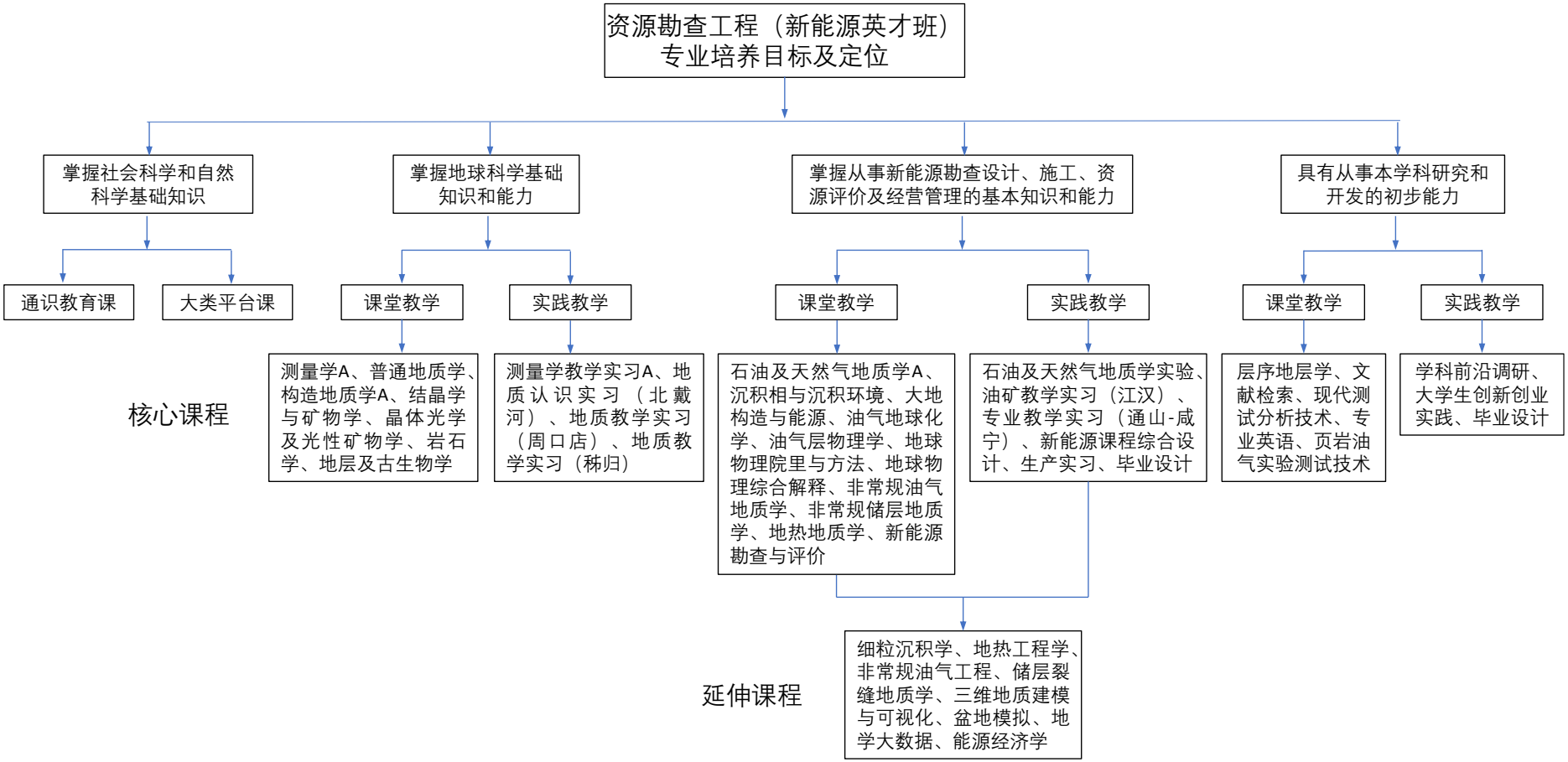
创新创业训练：油气地质创新创业训练、AAPG-IBA 竞赛、PETROBOWL 竞赛、全国大学生地质技能大赛、全国油气地质大赛、寻找“李四光”卓越地质师培育计划。

毕业学分要求：177

学制与学位：四年，工学学士

本专业学生可以辅修的其他专业：地质工程

相近专业：地质学、勘查技术与工程、石油工程


资源勘查工程（新能源英才班）
专业培养目标及定位
掌握社会科学和自然科学基础知识
掌握地球科学基础知识和能力
掌握从事新能源勘查设计、施工、资源评价及经营管理的基本知识和能力
具有从事本学科研究和开发的初步能力
通识教育课
大类平台课
课堂教学
实践教学
课堂教学
实践教学
课堂教学
实践教学
核心课程
测量学A、普通地质学、构造地质学A、结晶学与矿物学、晶体光学及光性矿物学、岩石学、地层及古生物学
测量学教学实习A、地质认识实习（北戴河）、地质教学实习（周口店）、地质教学实习（秭归）
石油及天然气地质学A、沉积相与沉积环境、大地构造与能源、油气地球化学、油气层物理学、地球物理院里与方法、地球物理综合解释、非常规油气地质学、非常规储层地质学、地热地质学、新能源勘查与评价
石油及天然气地质学实验、油矿教学实习（江汉）、专业教学实习（通山-咸宁）、新能源课程综合设计、生产实习、毕业设计
层序地层学、文献检索、现代测试分析技术、专业英语、页岩油气实验测试技术
学科前沿调研、大学生创新创业实践、毕业设计
延伸课程
细粒沉积学、地热工程学、非常规油气工程、储层裂缝地质学、三维地质建模与可视化、盆地模拟、地学大数据、能源经济学

Program for Exploration Engineering of Mineral Resources

(New Energy Elites)

Specialty and Code: Exploration Engineering of Mineral Resources 081403

Education Objective:

1. This major aims to train students to become qualified new engineering and technical talents with broad international vision, solid professional knowledge systems, systematic engineering training, scientific thinking methods, and innovation consciousness. They are expected to meet the needs of scientific research and exploration of new energy resources, including shale oil and gas, tight sand oil and gas, natural gas hydrates, and geothermal energy, etc.
2. Graduates, are expected to pursue higher level studies, or after about 5 years, are expected to be project managers or business mainstay in society and/or investigation and exploitation of new energy resources, and to obtain medium title at least.

Graduation Requirements:

1. **Engineering knowledge:** Students are required to be able to use mathematics, natural science, engineering and new energy exploration knowledge to solve complex engineering problems in new energy exploration;
2. **Problem analysis:** Students are expected to be able to identify, express and analyze complex engineering problems in new energy exploration through literature research, and obtain valid conclusions using basic principles of applied mathematics, natural science and new energy exploration theory;
3. **Solution design/development:** Students are asked to be able to provide solutions for complex engineering problems in new energy exploration, design system, unit (component) or technical process which meet the specific needs, and embody the sense of innovation and consider social, health, safety, law, culture and environment factors in the design processes;
4. **Research:** Students are required to be able to carry out the research on complex engineering problems in new energy exploration based on principles of science and scientific methods which include experimental design, data analysis and interpretation, and to draw reasonable and reliable conclusions through information synthesis;
5. **Modern tools application:** Students are expected to be able to develop, select and use appropriate technology, resources, modern engineering tools and

information technology tools to solve out complex engineering problems in new energy exploration, including prediction and modeling of complex engineering problems and understanding its limitations;

6. **Engineering and society:** Students are asked to be able to analyze social problems based on new energy exploration engineering related background knowledge, evaluate impacts on society, health, safety, law and culture during the solution process of complex engineering problems, and understand the responsibilities that should be borne;
7. **Environment and sustainable development:** Students are supposed to be able to understand and evaluate impacts of professional engineering practice for the complex engineering problems in new energy exploration on environment and sustainable development of society.
8. **Professional standard:** Students are expected to obtain humanities and social science literacy and social responsibility, and be able to understand and comply with the engineering ethics and standards in the practice of new energy exploration, and fulfill the responsibility;
9. **Individual and team work:** Students are required to be able to assume the role of individual, team member, and the person in charge;
10. **Communication:** Students are asked to be able to effectively communicate and exchange with industry peers and the public on complex engineering problems in new energy exploration, including report writing, document designing, statement presenting, opinion expressing and instruction responding. Students should also have a certain international perspective, and can exchange and communicate in cross-cultural settings;
11. **Project management:** Students are asked to be able to understand and master the engineering management principles and economic decision-making methods, and apply them in multi discipline environment;
12. **Life-time learning:** Students should have autonomous and lifelong learning consciousness, and possess the ability of continuous learning and development adapting.

Graduation requirements and ways to achieve：

No.	Aims	Approches（Teaching arrangement）
1	**Engineering knowledge:** Students are required to be able to use mathematics, natural science,	① **Classroom Teeaching:** Advanced Mathematics B, Probability and Mathematical Statistics B, Linear Algebra B, College Physics

No.	Aims	Approches（Teaching arrangement）
	engineering and new energy exploration knowledge to solve complex engineering problems in hydrocarbon exploration.	B, Physics Experiments B, College Chemistry B, College Chemistry Experiments B, General Geology, Surveying A, Crystallography and Mineralogy, Crystal Optics and Optical Mineralogy, Introduction to Petrology, Stratigraphy and Paleontology, Structural Geology A, Fundamentals of Rock Mechanics, Introduction to Hydrogeology B, Petroleum Geology A, Sedimentary Facies and Sedimentary Environment, Geotectonics and Energies, Petroleum Geochemistry, Petroleum Reservoir Physics, Geophysical Principles and Methods, Integrated Interpretation for Geophysics, Unconventional Oil and Gas Geology, Unconventional Reservoir Geology, Geothermic Geology, Exploration and Evaluation of New Energy, Sequence Stratigraphy, Geothermal Engineering, Unconventional Oil and Gas Geology and Engineering, Fine-grained Sedimentology, etc. ② **Out-of-class Learning:** Lectures on special topics, Academic report, etc.
2	**Problem analysis:** Students are expected to be able to identify, express and analyze complex engineering problems in new energy exploration through literature research, and obtain valid conclusions using basic principles of applied mathematics, natural science and new energy exploration theory.	①**Classroom Teaching：** Survying Practice A, Primary Field Training (Beidaihe), Geological Field Training (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), Course Design of Sedimentary Rock Core Catalog, Major Course Design for New Energy, etc. ②**Out-of-class Learning：** Course homework, Student Research Training Plan, Activity for Searching Li Si-guang, Survey Report of Academic Frontier, Practice for Graduation, Design for Graduation (Thesis), etc.

No.	Aims	Approches（Teaching arrangement）
3	**Solution design/development:** Students are asked to be able to provide solutions for complex engineering problems in new energy exploration, design system, unit (component) or technical process which meet the specific needs, and embody the sense of innovation and consider social, health, safety, law, culture and environment factors in the design processes.	①**Classroom Teaching：** Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), Course Design of Sedimentary Rock Core Catalog, Major Course Design for New Energy, etc. ②**Out-of-class Learning：** Course homework, Student Research Training Plan, Activity for Searching Li Si-guang, Practice for Graduation, Design for Graduation (Thesis), etc.
4	**Research:** Students are required to be able to carry out the research on complex engineering problems in new energy exploration based on principles of science and scientific methods which include experimental design, data analysis and interpretation, and to draw reasonable and reliable conclusions through information synthesis.	①**Classroom Teaching：** Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), Course Design of Sedimentary Rock Core Catalog, Major Course Design for New Energy, Integrated Interpretation for Geophysics, etc. ②**Out-of-class Learning：** Course homework, Student Research Training Plan, Activity for Searching Li Si-guang, Practice for Graduation, Design for Graduation (Thesis), Survey Report of Academic Frontier, etc.
5	**Modern tools application:** Students are expected to be able to develop, select and use appropriate technology, resources, modern engineering tools and information technology tools to solve out complex engineering problems in new energy exploration, including	① **Classroom Teaching：** College English, Program Design in C Language B, Course Design for Program Design in C Language B, Specialized English, Literature Retrieval, Testing Technologies of Shale Oil and Gas, Course Design of Sedimentary Rock Core Catalog, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian) ,

No.	Aims	Approches（Teaching arrangement）
	prediction and modeling of complex engineering problems and understanding its limitations.	Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), Major Course Design for New Energy, Major Course Design for New Energy, etc. **②Out-of-class Learning：** Course homework, Student Research Training Plan, Lectures on special topics, Practice for Graduation, Design for Graduation (Thesis), Survey Report of Academic Frontier, etc.
6	**Engineering and society:** Students are asked to be able to analyze social problems based on new energy exploration engineering related background knowledge, evaluate impacts on society, health, safety, law and culture during the solution process of complex engineering problems, and understand the responsibilities that should be borne.	**① Classroom Teaching：** Introduction to Geological Resources, Petroleum Geology A, Unconventional Oil and Gas Geology, Unconventional Reservoir Geology, Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), Unconventional Oil and Gas Engineering, etc. **②Out-of-class Learning：** Course homework, Student Research Training Plan, Lectures on special topics, Practice for Graduation, Design for Graduation (Thesis), Survey Report of Academic Frontier, etc.
7	**Environment and sustainable development:** Students are supposed to be able to understand and evaluate impacts of professional engineering practice for the complex engineering problems in new energy exploration on environment and sustainable development of society.	**① Classroom Teaching：** Economics of Petroleum Technique, Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), etc. **②Out-of-class Learning：** Course homework, Student Research Training Plan, Lectures on

No.	Aims	Approches（Teaching arrangement）
		special topics, Practice for Graduation, Design for Graduation (Thesis), Survey Report of Academic Frontier, etc.
8	**Professional standard:** Students are expected to obtain humanities and social science literacy and social responsibility, and be able to understand and comply with the engineering ethics and standards in the practice of new energy exploration, and fulfill the responsibility.	① **Classroom Teaching :** Principles of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, The Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Military Theory and Training, Physical Education, Entrance Education, Student Psychologically Healthy Education, Policy and Situation Education, Guide for Career, Education for Graduation, etc. ②**Out-of-class Learning：**Social Investigation, Student Research Training Plan, Lectures on special topics, Practice for Graduation, Design for Graduation (Thesis), Survey Report of Academic Frontier, etc.
9	**Individual and team work:** Students are required to be able to assume the role of individual, team member, and the person in charge.	①**Classroom Teaching：** Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), etc. ②**Out-of-class Learning：** Course homework, Practice for Graduation, Design for Graduation (Thesis), etc.
10	**Communication:** Students are asked to be able to effectively communicate and exchange with industry peers and the public on complex engineering problems in new energy exploration, including	①**Classroom Teaching：** Specialized English, Survying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice

No.	Aims	Approches（Teaching arrangement）
	report writing, document designing, statement presenting, opinion expressing and instruction responding. Students should also have a certain international perspective, and can exchange and communicate in cross-cultural settings.	(Tongshan-Xianning), etc. ②**Out-of-class Learning：** Survey Report of Academic Frontier, Meeting on Scientific Research, Academic Lectures, Writing on Scientific Research, Taking part in Scientific Research Projects, Practice for Graduation, Design for Graduation (Thesis), etc.
11	**Project management:** Students are asked to be able to understand and master the engineering management principles and economic decision-making methods, and apply them in multi discipline environment.	① **Classroom Teaching：** Economy and Management Courses, Energy Economics, Surveying Practice A, Primary Field Training (Beidaihe), Geological Teaching Practice (Zhoukoudian), Geological Field Training (Zigui), Oil-field Teaching Practice (Jianghan), Professional Integration Practice (Tongshan-Xianning), etc. ②**Out-of-class Learning：** Student Research Training Plan, Practice for Graduation, Design for Graduation (Thesis), Taking part in Scientific Research Projects, etc.
12	**Life-time learning:** Students should have autonomous and lifelong learning consciousness, and possess the ability of continuous learning and development adapting.	①**Classroom Teaching：** Morality Education and Fundamentals of Law, Principles of Marxism, Literature Retrieval, etc. ②**Out-of-class Learning：** Course homework, Subject contest, Invention and creation, Research report, Student Research Training Plan, etc.

Major Disciplines: Earth Resources and Geological Engineering

Main Courses: Petroleum Geology A, Sedimentary Facies and Sedimentary Environment, Geotectonics and Energies, Petroleum Geochemistry, Petroleum Reservoir Physics, Geophysical Principles and Methods, Integrated Interpretation for Geophysics, Unconventional Oil and Gas Geology, Unconventional Reservoir Geology, Geothermic Geology, Exploration and Evaluation of New Energy

Lab Experiments: Conventional and Unconventional Petroleum Geological

Experiments, Tectonic Modeling, Petroleum Geochemistry Experiments, Observation and Description of Core Samples, Integrated Interpretation for Geophysics, etc.

Practical Work: Primary Field Training (Beidaihe), Geological Field Training(Zhoukoudian), Geological Field Training(Zigui), Oil-field Teaching Practice (Jiang Han), Professional Integration Practice (Tongshan-Xianning), Major Course Design for New Energy, Course Design of Sedimentary Rock Core Catalog, Practice for Graduation, Thesis (Design) for Graduation, etc.

Requirements for Graduation Credits: 177

Duration& Degree Granted: Four years, Bachelor of Engineering

Recommended minor: Geology Engineering

Related Specialties: Geolog, Exploration Technology and Engineering, Petroleum Engineering

资源勘查工程（新能源英才班）专业课程教学计划表

课程类别 Classi-fication		课程编号 Code	课程名称 Course Name	学分 Crs	课内总学时 Hrs	学时分类 Class Hours					先修课程 Prerequisite courses	学期学分分配 Semester Credits							
						课内学时		课外学时				一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
						讲课 Lec.	课内实验 Lab	实验/科研实践 Lab/Res.	研讨 Dis	素质拓展 Exp									
通识教育课 Liberal Education Courses	必修 Compulsory	11706200	马克思主义基本原理概论 Principles of Marxism	3	48	48							3						
		11706500	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics	4	64	64								4					
		11711800	中国近现代史纲要 The Essentials of Modern Chinese History	2	32	32						2							
		12005200	思想道德修养与法律基础 Morality Education and Fundamentals of Law	3	48	48						3							
		12005300	形势与政策 Situation and Policy	2	32	32						每学期平均分配							
		113076*0	体育 Physical Education	4	144	144						1	1	1	1				
		109234*0	大学英语 College English	9	144	144				48		3	3	3					
		14300300	军事理论 Military Theory	2	36	36						2							
	选修 Elective		生态学概论 Introduction to Ecology	1.5	24	24						1.5							
		10815300	管理和项目管理、矿山经济评价（指选） Management and Economic Evaluation of Mine Projection Management	3	48	48										3			
		20216700	矿产资源法律法规（指选） Laws and Regulations Courses	1.5	24	24													1.5
		包括管理和项目管理、矿山经济评价、矿产资源法律法规、生态学概论三门必修课程总计 12 学分，含创新创业选修课学分，跨学科选修课不低于 4 学分		6	96	96													
		小计 Sum		**41**	**740**	**740**				**48**		**12.5**	**7**	**8**	**1**	**3**	**0**	**0**	**1.5**
学科基础课 Disciplinary Fundamental Courses		20212900	资源导论 Introduction to Geological Resources	1	16	16						1							
		21929102	C 语言程序设计 B Program Design in C Language B	2	32	32		8		8		2							
		212127*2	高等数学 B Advanced Mathematics B	10	160	160						4	6						

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	课内总学时 Hrs	学时分类 Class Hours					先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					课内学时		课外学时				一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
					讲课 Lec.	课内实验 Lab	实验/科研实践 Lab/Res.	研讨 Dis	素质拓展 Exp									
	21212802	线性代数 B Linear Algebra B	2.5	40	40								2.5					
	21213502	概率论与数理统计 B Probability and Mathematical Statistics B	2.5	40	40								2.5					
	212130*2	大学物理 B College Physics B	7	112	112							3.5	3.5					
	21216902	物理实验 B Physics Experiments B	1.5	48	4	44						1.5						
	20326902	大学化学 B College Chemistry B	3.5	56	56						3.5							
	20327002	大学化学实验 B College Chemistry Experiments B	1.5	36		36					1.5							
	21130401	测量学 A Surveying A	2	32	32		16					2						
	20119600	普通地质学 General Geology	2.5	40	40		8				2.5							
	20104001	构造地质学 A Structural Geology A	4	64	36	28								4				
	20104600	结晶学及矿物学 Crystallography and Mineralogy	5	80	36	44							5					
	20115500	晶体光学及光性矿物学 Crystal Optics and Optical Mineralogy	3	48	14	34							3					
	20119900	岩石学导论 Petrology	5	80	40	40	4	4		结晶学与矿物学				5				
	20118300	地层及古生物学 Stratigraphy and Paleontology	3	48	36	12								3				
	20538200	岩石力学基础 Fundamentals of Rock Mechanics	2	32	32									2				
	20409102	水文地质学基础 B Introduction to Hydrogeology B	2.5	40	32	8								2.5				
	小计 Sum		**60.5**	**1004**	**758**	**246**	**36**	**4**	**8**		**14.5**	**13**	**16.5**	**16.5**	**0**	**0**	**0**	**0**
专业主干课 Main Specialty Courses	20222301	石油及天然气地质学 A Petroleum Geology A	3.5	56	56										3.5			
	20222400	石油及天然气地质学实验 Petroleum Geology Experiments	1.5	24		24									1.5			
	20228900	沉积相与沉积环境 Sedimentary Facies and Sedimentary Environment	2	32	32		16	8	8						2			
	20229000	大地构造与能源 Geotectonics and Energies	2	32	32		16	8	8						2			
	20226600	油气地球化学 Petroleum Geochemistry	2	32	32		24	8							2			
	20222000	油（气）层物理学 Petroleum Reservoir Physics	2	32	32		16									2		

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	课内总学时 Hrs	学时分类 Class Hours					先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					课内学时		课外学时											
					讲课 Lec.	课内实验 Lab	实验/科研实践 Lab/Res.	研讨 Dis	素质拓展 Exp		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	20617900	地球物理原理与方法 Geophysical Principles and Methods	3	48	48										3			
	20618000	地球物理综合解释 Integrated Interpretation for Geophysics	2	32	24	8	16									2		
	20229100	非常规油气地质学 Unconventional Oil and Gas Geology	2	32	32		8	8								2		
	20229200	非常规储层地质学 Unconventional Reservoir Geology	2	32	32		8	8								2		
	20229300	地热地质学 Geothermic Geology	2	32	32		8	8	8							2		
	20229400	新能源勘查与评价 Exploration and Evaluation of New Energy	2	32	32		8										2	
	小计 Sum		**26**	**416**	**384**	**32**	**120**	**48**	**24**						**14**	**10**	**2**	
专业选修课 Specialty Elective Courses		可按方向设课，具体见专业选修课列表	10	160														
合计 Sub-total			**137.5**	**2320**	**1882**	**278**	**156**	**52**	**80**	**0**	**27**	**20**	**24.5**	**17.5**	**17**	**10**	**2**	**1.5**
实践环节 Practical Work	44300400	军事训练 Military Training	2	2 周							2							
	41919002	C 语言课程设计 B Course Design for Program Design in C Language B	1.5	1.5 周							1.5							
	41120901	测量教学实习 A Surveying Practice A	1	1 周								1						
	40115200	地质认识实习（北戴河） Primary Field Training (Beidaihe)	2	2 周								2						
	40115602	地质教学实习（周口店）B Geological Field Training (Zhoukoudian) B	4	4 周										4				
	40115702	地质教学实习（秭归）B Geological Field Training (Zigui) B	2	2 周										2				
	40218800	油矿教学实习（江汉） Oil-field Teaching Practice (Jiang Han)	2	2 周												2		
	40218000	专业教学实习（通山-咸宁） Professional integration practice (Tongshan-Xianning)	2	2 周												2		
	40221000	新能源专业课程综合设计 Major Course Design for New Energy	4	4 周													4	
	40214900	生产实习 Practice for Graduation	6	6 周													6	
	40218400	毕业设计（论文） Design for Graduation (Thesis)	8	8 周														8

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	课内总学时 Hrs	学时分类 Class Hours					先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					课内学时		课外学时											
					讲课 Lec.	课内实验 Lab	实验/科研实践 Lab/Res.	研讨 Dis	素质拓展 Exp		一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
	小计 Sum		34.5	34.5 周							3.5	3		6		4	10	8
创新创业自主学习 Freedom study		社会调查 Social Investigation	2	2 周														
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3	3 周														
	小计 Sum		5	5 周														
总计 Total			177	2320+39.5 周	1882	278	156	52	80		30.5	23	24.5	23.5	17	14	12	9.5
可开出专业选修课列表 Specialty Elective Courses	20213600	层序地层学 Sequence Stratigraphy	2	32	20	12										2		
	20221300	页岩油气实验测试技术 Testing Technologies of Shale Oil and Gas	2	32	24	8											2	
	20229500	细粒沉积学 Fine-grained Sedimentology	1.5	24	24		8										1.5	
	20226800	新能源概论 （必选） New Energy Generality	1.5	24	24			8								1.5		
	20541600	地热工程学 Geothermal Engineering	1.5	24	24		8										1.5	
	20836900	能源经济学 Energy Economics	2	32	32											2		
	20229600	环境保护和资源利用 Environmental Protection and Resource Utilization	2	32	32												2	
	21726300	能源法 Energy Law	2	32	32												2	
	20221600	地学大数据 Big Geodata	2	32	32												2	
	20229900	非常规油气工程 Unconventional Oil and Gas Engineering	2	32	32												2	
	20229700	储层裂缝地质学 Reservoir Fracture Geology	1.5	24	24		8										1.5	
	20229800	三维地质建模与可视化 3D Geological Modeling and Visualization	1.5	24	24		8									1.5		
	20216800	专业英语（必选） Specialized English	2	32	20	12											2	
	20216900	专业文献检索 Literature Retrieval	1	16	12	4											1	
	21929201	Python 语言程序设计 A Python Language Programming A	2.5	40	40		16							2.5				

课程类别 Classi-fication	课程编号 Code	课程名称 Course Name	学分 Crs	课内总学时 Hrs	学时分类 Class Hours					先修课程 Prerequisite courses	学期学分分配 Semester Credits							
					课内学时		课外学时				一 1st	二 2nd	三 3rd	四 4th	五 5th	六 6th	七 7th	八 8th
					讲课 Lec.	课内实验 Lab	实验/科研实践 Lab/Res.	研讨 Dis	素质拓展 Exp									
	21915100	人工智能导论 Introduction to Artificial Intelligence	2	32	32										2			
	20217000	数字地质调查新技术与方法 Regional Geological Survey and New Techniques	2	32	4	28								2				
	20221100 创新创业类课程	油气地质创新创业训练 Innovation and Entrepreneurship Training for Oil and Gas Geology	2	32	20	12											2	

注：全英课程须在课程名称后打*标出，通识教育选修课学分未列入具体学期，学院须根据学校创新创业自主学习学分认定一览表制订实施细则。

资源勘查工程（新能源英才班）专业课程分类统计

课程类别 / 统计	通识教育课程 Liberal Education Courses		学科基础课 Disciplinary Fundamental Courses	专业主干课 Main Specialty Courses	专业选修课 Specialty Elective Courses	实践环节 Practical Work	创新创业自主学习 Freedom Study	学时总计 Total Hour	学分总计 Total Credits
	必修	选修							
学时/学分	548/29	192/12	1004/60.5	416/26	160/10	34.5 周 /34.5	5 周/5	2320+39.5 周	177
学分所占比例	23.2%		34.2%	14.7%	5.6%	19.5%	2.8%		100%