

石油工程专业培养方案

专业名称与代码：石油工程 081502

专业培养目标：

1. 培养学生热爱祖国，遵纪守法，具有社会责任感、良好的科学文化素养和服务社会的职业道德，德智体全面发展。
2. 掌握与“常规及非常规”油气资源、地热资源开发相关的基础地质、工程设计和管理的 basic 理论和方法，具备扎实的工科基础理论和较全面的石油工程专业知识，具有国际视野、创新精神和实践能力。
3. 毕业后能在石油工程领域从事常规与非常规油气藏工程、油气钻井与完井工程、采油气工程、油气藏管理与评价及相关的地热等资源开发等方面的科学研究和生产管理等工作。
4. 通过毕业后五年的工作实践，能够成长为石油工程领域及相关能源领域的专业认证工程师。

专业毕业要求：

1. 能够将数学、自然科学、工程基础和专业知 识用于解决复杂的石油工程及相关领域问题；
2. 能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析油气和相关地热等能源资源开发过程中的复杂工程问题，以获得有效结论；
3. 能够设计针对油气田及相关的地热等能源资源开发与油气井工程施工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. 能够基于科学原理并采用科学方法对石油工程及相关的地热等能源领域内的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. 能够针对石油工程及相关的地热等能源领域内的复杂工程问题，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. 能够基于工程相关背景知识进行合理分析，评价石油工程及相关的地热等能源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. 能够理解和评价针对石油工程及相关的地热等能源领域内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. 具有人文社会科学素养、社会责任感，能够在石油及相关的地热等能源工程实践中理解并遵守工程职业道德和规范，履行责任；

9. 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. 能够就石油工程及相关的地热等能源领域内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. 理解并掌握石油工程及相关的地热等能源领域内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. 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	能够将数学、自然科学、工程基础和专业知用于解决复杂的石油工程问题。	① 课堂教学 ：高等数学 B，概率论与数理统计 B，线性代数，大学物理 C，大学化学 B、电工与电子技术 B、机械设计基础 B、工程力学 B、物理实验，油藏工程、采油工程、油气钻井与完井工程、油气井增产技术、石油工程课程设计、石油工程综合技能实训、石油工程综合技能、石油工程实践案例分析等。 ② 课外学习 ：大学生科研立项、生产实习、毕业论文设计、寻找李四光活动等。
2	能够应用数学、自然科学和工程科学的基本原理，识别、表达、并通过文献研究分析复杂工程问题，以获得有效结论。	① 课堂教学 ：石油渗流力学、工程力学 B、油田化学、地质教学实习（秭归）、岩心编录、油藏数值模拟、油藏精细描述等。 ② 课外学习 大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、校园专业文献网络、图书馆文献检索专题讲座、读书报告文献检索、毕业论文及答辩文献检索等。
3	能够设计针对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。	① 课堂教学 ：石油工程课程设计、油矿教学实习、思想道德修养与法律基础等。 ② 课外学习 专题讲座、大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、社会调查、三下乡活动等。
4	能够基于科学原理并采用科学方法对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 ：油气层物理学、油气储层地质学、油藏工程、采油工程、油气钻井与完井工程、气藏工程、海洋钻采工程、岩石力学在石油工程中的应用、信息化技术在油田开发中的应用、石油工程课程设计等。 ② 课外学习 专题讲座、课程作业、大学生科研立项、生产实习、毕业论文设计、学科前沿调研报告、寻找李四光活动等。
5	能够针对复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息	① 课堂教学 ：：测量学 A、测量教学实习 A、油藏精细描述、油气藏建模、油藏数值模拟、石油工程计算机应用、石油工程课程设计、地质教学实习（北戴河）、地质教学实习（秭归）、

序号	毕业要求	实现途径(教学过程)
	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。	油矿教学实习(江汉)等。 ② 课外学习 课程作业、大学生科研立项、生产实习、毕业论文设计等。
6	能够基于工程相关背景知识进行合理分析,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。	① 课堂教学 :提高石油采收率原理、钻井液工艺学、(油气)储层保护技术、试井分析、油气井增产增注技术、油气藏动态分析、生产测井、水平井技术、石油工程课程设计、油矿教学实习(江汉)等。 ② 课外学习 :专题讲座、大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、工程设计竞赛等。
7	能够理解和评价针对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 :油田化学、油气钻井与完井工程、钻井液工艺学、石油工程 HSE、油气井增产增注技术、石油技术经济学、非常规油气藏开发理论与技术、水平井技术、石油工程课程设计、油矿教学实习(江汉)等。 ② 课外学习 工程专题讲座、课程作业、寻找李四光活动等。
8	具有人文社会科学素养、社会责任感,能够在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; ② 课外学习 :地质实习,生产实习,毕业答辩,寻找李四光活动,指南针讲座。
9	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、地质教学实习(北戴河)、地质教学实习(秭归)、油矿教学实习(江汉)、石油工程课程设计、岩芯编录等。 ② 课外学习 社会调查、军事训练、大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、三下乡活动、体育、社团活动、公益活动、工程设计竞赛等。
10	能够就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 :大学英语、思想道德修养与法律基础、石油工程导论、文献检索、学科前沿调研报告等。 ② 课外学习 社会调查、军事训练、学科竞赛、发明创造、科 研报告、大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、三下乡活动、社团活动、公益活动等。
11	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。	① 课堂教学 :思想道德修养与法律基础、石油技术经济学、石油工程课程设计、油矿教学实习(江汉)等。 ② 课外学习 社会调查、寻找李四光活动、指南针讲座、工程设计竞赛等。
12	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、石油工程导论。 ② 课外学习 社会调查、军事训练、学科竞赛、发明创造、科 研报告、大学生科研立项、生产实习、毕业论文设计、寻找李四光活动、三下乡活动、社团活动、公益活动等。

主干学科：石油与天然气工程。

专业核心课程：工程力学、机械设计、油气开发地质学、油气层物理学、渗流力学、油气（藏）工程、采油工程、油气钻井与完井工程等。

主要专业实验：油层物理实验、钻采工程实验、油藏工程实验、渗流实验、油田化学实验等。

主要实践性教学环节：金工实习、计算机程序课程设计、地质认识实习（北戴河）、地质教学实习（秭归）、油矿教学实习（江汉油田）、石油工程课程设计、生产实习、毕业（设计）论文等。

毕业学分要求：钻采工程方向 172.5；油藏工程方向 172。

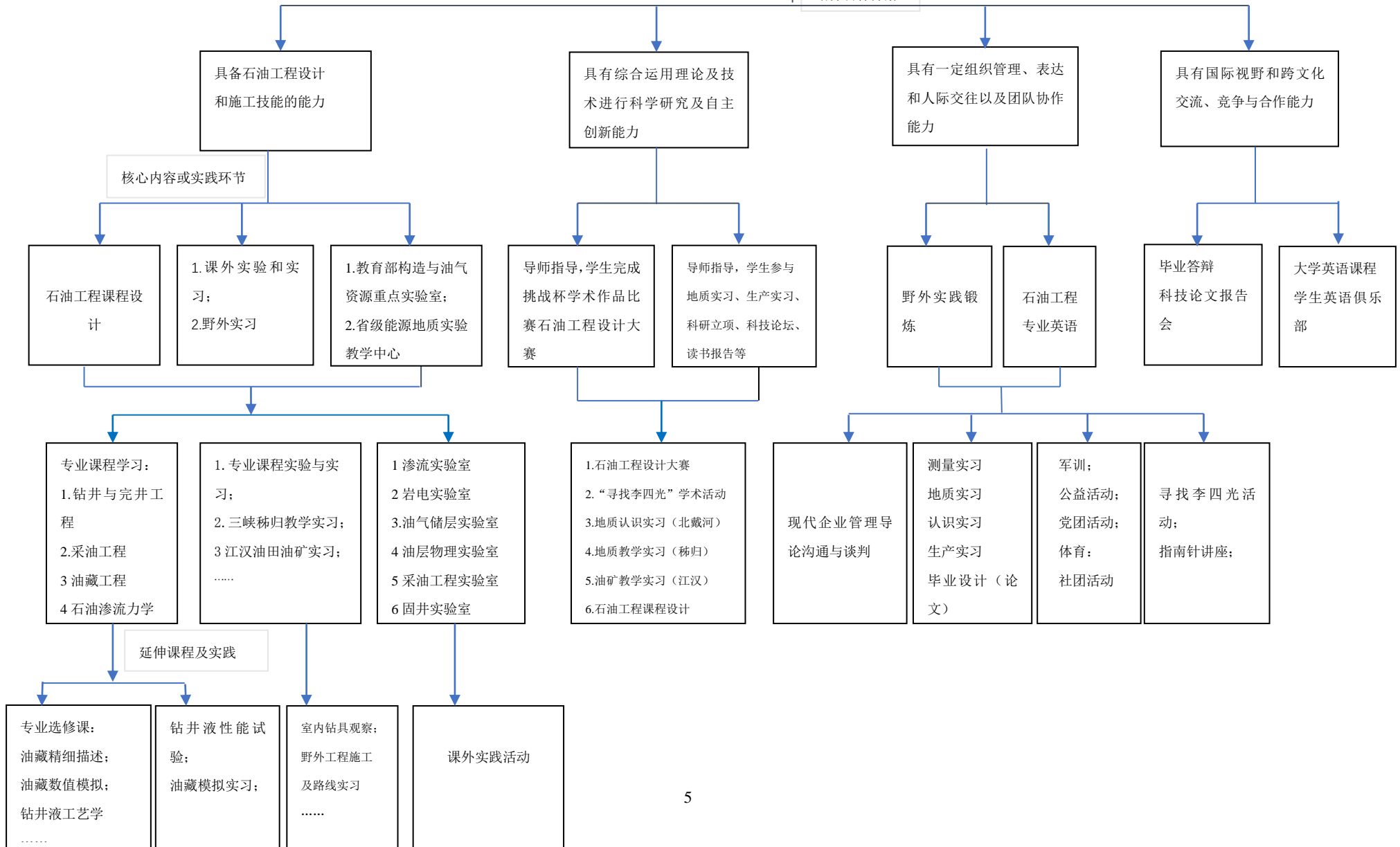
学制与学位：四年，石油工程工学学士。

本专业学生可以辅修的其他专业：资源勘查工程、环境工程、地质工程。

相近专业：采矿工程、资源勘查工程。

石油工程专业培养目标及定位

培养目标分解



Petroleum Engineering Program

Major and Code: Petroleum Engineering 081502

Education Objective:

1. Candidates should be trained for engineer and technical talents who love their motherland, obey the rules and laws, have a sense of social responsibility, innovation spirit and practical ability, possess good scientific and cultural qualities and professional ethic to serve for the society,
2. Get an overall development of morality, intelligence and physique, master the basic theory and methodology of fundamental geology, and possess the basic skills for petroleum engineering design and management.
3. Graduates acquired the fundamental theories and over-all knowledge of petroleum engineering, and are well-prepared for further research study or the professional work in the energy industry such as development geology, reservoir characterization and modeling, drilling and completion, reservoir stimulation, oil and gas production engineering, reservoir engineering, reservoir management and evaluation.
4. In five years after graduation, students should be able to work in petroleum engineering and its related energy fields. design and implementation in enterprise and institutions, and to obtain medium title at least.

Graduation Requirements:

1. Candidates are able to apply math, natural science, fundamental and professional knowledge of engineering to solve complicated petroleum engineering problems;
2. Candidates are able to apply the basic principle of math, natural science and engineering science to analyze complicated engineering problems in the process of oil and gas resources development and its related energy fields so as to achieve effective conclusion, associated with literature research;
3. Candidates are able to design solutions for complicated engineering problems in oil and gas and geothermal field development and oil and gas well engineering construction, and design system, unit(component) and process to meet specific needs, in which embody candidate's innovative consciousness as well as considerations for many factors such as society, healthy, safety, law, culture and environment;
4. Candidates are able to carry out researches on complicated engineering problems applying scientific principles and scientific methods in the field of petroleum engineering and its related energy, including designing experiments, analyzing and interpreting datum to achieve reasonable and effective conclusion associate with comprehensive information;

5. Candidates are able to develop, select or use appropriate technology, resources and modern engineering tools and information technology tools for different complicated engineering problems in the field of petroleum engineering and its related energy, including the prediction and simulation of complex engineering problems, and the understanding of its limitations;
6. Candidates are able to analyze and evaluate the influence of petroleum engineering and its related energy practice and solution of engineering problems on the society, health, safety, law and culture reasonably based on the engineering background knowledge, and to understand the responsibility should be taken for;
7. Candidates are able to understand and evaluate the influence of professional engineering practice for complicated engineering problems on the environment and the social sustainable development in the field of petroleum engineering and its related energy;
8. Candidates are required to gain the knowledge of humanity and social science, the sense of social responsibility and professional ethics, and need to understand and obey the professional ethics and rules as well as to perform their duties in the petroleum engineering and its related energy practice;
9. Candidates are able to play the role of individuals, team members, and leaders in the multidisciplinary team;
10. Candidates are able to communicate effectively with the industry peers and the social public about complicated engineering problems in the field of petroleum engineering and its related energy, including writing reports, designing documents, giving speeches, expressing clearly or responding to commands, and having a certain international vision and the ability of international communication;
11. Candidates are able to understand and grasp the principle of project management and economic decision method in the fields of petroleum engineering and its related energy, and be able to apply them in multidisciplinary environment;
12. Candidates are required to have the consciousness of independent and life-long learning, and be capable of learning sustainably and adapting to the development.

Graduation requirements and ways to achieve

No.	Graduation requirements	Ways to achieve (teaching process)
1	Candidates are able to apply math, natural science, fundamental and professional	① Courses: Advanced Mathematics (B), Probability Theory and Mathematics Statistics(B), Linear Algebra(B), College Physics(B), College Chemistry(C), Basis of Electrical Engineering and Technology (B), Basis of Mechanical Designing B, Engineering Mechanics B, Physics Experiments, Petroleum Reservoir

No.	Graduation requirements	Ways to achieve (teaching process)
	<p>knowledge of engineering to solve complicated petroleum engineering problems;</p>	<p>Engineering,Petroleum-Production Engineering, Drilling & well Completion Engineering, Course Design for Petroleum Engineering, reservoir stimulation,Comprehensive Skill Training of Petroleum Engineering,Comprehensive Skills in Petroleum Engineering,Case Study of Petroleum Engineering Practice,etc.</p> <p>② Out-of-class learning : College Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master (Li Siguang) SearchingActivity, etc.</p>
2	<p>Candidates are able to apply the basic principle of math, natural science and engineering science to analyze complicated engineering problems so as to achieve effective conclusion, associated with literature research;</p>	<p>① Courses: Transfusion Mechanics of Petroleum, Engineering Mechanic (B), Oil Field Chemistry,GeologicalTeaching Practice in Three Gorges (ZiGui), Core catalog, Reservoir Simulation, Precise Reservoir Description,etc;</p> <p>② Out-of-class learning : College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master (Li Siguang) SearchingActivity, Campus Network for Professional Literature, Library Literature Retrieval Lectures, Literature Research Report, Thesis and Defense Literature Searches, etc.</p>
3	<p>Candidates are able to design solutions for complicated engineering problems and design system,unit(component) and process to meet specific needs, in whichembodycandidate'sinnovative consciousness as well as considerations for many factors such as society, healthy,safety,law, culture and environment;</p>	<p>① Courses:Course Design for Petroleum Engineering, Oil field Teaching Practice(JiangHan), Morality Education and Fundamentals of Law, etc.</p> <p>② Out-of-class learning : Seminars, College Students Scientific Research Project, Practice for Graduation, Bachelor Thesis(Design), Geology Master (Li Siguang) SearchingActivity,SocialInvestigation,the Country Activities, etc.</p>
4	<p>Candidates are able to carry out researches on complicated engineering problems applyingscientific principles and scientific methods,including</p>	<p>①Courses: Petroleum Reservoir Physics, Oil and Gas Reservoir Geology , Petroleum Reservoir Engineering, ① ① Courses:Petroleum Production Engineering, Drilling &well Completion Engineering, Gas Reservoir Engineering,Offshore Drilling Engineering,Application of Rock Mechanics in Petroleum Engineering,Application of Information Technology in Oilfield</p>

No.	Graduation requirements	Ways to achieve (teaching process)
	designing experiments, analyzing and interpreting datum to achieve reasonable and effective conclusion associate with comprehensive information;	Development, Course Design for Petroleum Engineering, etc. ② Out-of-class learning: Seminars, Course Assignments, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master (Li Siguang) SearchingActivity, etc.
5	Candidates are able to develop, select or use appropriate technology, resources and modern engineering tools and information technology tools for different complicated engineering problems, including the prediction and simulation of complex engineering problems, and the understanding of its limitations;	① Courses: Surveying A, Surveying Practice A, Precise Reservoir Description, Reservoir Modeling,ReservoirSimulation,Computer Application of Petroleum Engineering,Course Design for Petroleum Engineering, Geological Cognition Practice (BeiDaihe), Geological Teaching Practice in Three Gorges (ZiGui), Oil field Teaching Practice (Jiang Han), etc. ② Out-of-class learning: Course Assignments, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), etc.
6	Candidates are able to analyze and evaluate the influence of engineering practice and solution of engineering problems on the society, health, safety, law and culture reasonably based on the engineering background knowledge, and to understand the responsibility should be taken for;	① Courses: Enhanced Oil Recovery, Drilling Fluid Technology, Reservoir Protection Technology,WellTesting, Production and Injection Stimulation Technology of Well, Dynamic Analysis of Petroleum Reservoir,Production Logging, Technique of Horizontal Wells, Course Design for Petroleum Engineering, Oil field Teaching Practice (Jiang Han), etc. ② Out-of-class learning: Seminars, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master(Li Siguang) SearchingActivity, EngineeringDesign Competition, etc.
7	Candidates are able to understand and evaluate the influence of professional engineering practice for complicated engineering problems on the environment and the social sustainable development;	① Courses: Oil Field Chemistry, Drilling & Well Completion Engineering, Drilling Fluids Technology, HSE of Petroleum Engineering,Production and Injection Stimulation Technology of Well, Economics of Petroleum Technique, Theory and Technology of Unconventional Reservoir Development,Technique of Horizontal Wells, Course Design for Petroleum Engineering, Oil field Teaching Practice(Jiang Han). etc. ② Out-of-class learning: Engineeringlectures,Course Assignments, Geology Master(Li Siguang) SearchingActivity,etc.

No.	Graduation requirements	Ways to achieve (teaching process)
8	Candidates are required to gain the knowledge of humanity and social science, the sense of social responsibility and professional ethics, and need to understand and obey the professional ethics and rules as well as to perform their duties in the engineering practice;	<p>①Courses: Principles of Marxism, Introduction to Mao Tse-tung Thought and the Theoretical System of Socialism with Chinese Characteristics, Essentials of Modern Chinese History, Morality Education and Fundamentals of Law, Psychological education for college students, Orientation week, Examination Policy, the Introduction of the Situation and Policy, Career Guidance, Military Theory and training, Graduate Lectures, etc.</p> <p>②Out-of-class learning: Geological Practice, Production Practice, Graduate Thesis Defense, Geology Master(Li Siguang)SearchingActivity, Compass Lectures.</p>
9	Candidates are able to play the role of individuals, team members, and leaders in the multidisciplinary team;	<p>① Courses: Surveying PracticeA,Geological Cognition Practice (BeiDaihe), Geological Teaching Practice in Three Gorges (ZiGui), Oil field Teaching Practice (Jiang Han),Course Design for Petroleum Engineering, Core catalog, etc.</p> <p>②Out-of-class learning: Social Investigation, Military Training, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master(Li Siguang) SearchingActivity, the Country Activities,Physical Education, Community Activities, Public Welfare Activities, Engineering Design competition, etc.</p>
10	Candidates are able to communicate effectively with the industry peers and the social public about complicated engineering problems, including writing reports, designing documents, giving speeches, expressing clearly or responding to commands, and having a certain international vision and the ability of international communication;	<p>① Courses: College English, Morality Education and Fundamentals of Law, Petroleum EngineeringIntroduction,LiteratureSearches,ScienceFrontierResearch Report, etc;</p> <p>②Out-of-class learning: Social Investigation, Military Training, Contest, Invention and Innovation, Research Presentation, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master(Li Siguang) SearchingActivity, the Country Activities,Physical Education, Community Activities, Public Welfare Activities, etc.</p>
11	Candidates are able to understand and grasp the principle of project management and economic decision method, and be able to	<p>① Courses:MoralityEducationand Fundamentals of Law, Economics of Petroleum Technique,Course Design for Petroleum Engineering, Oil field Teaching Practice (Jiang Han), etc.</p> <p>②Out-of-class learning: Social Investigation, Geology Master(Li</p>

No.	Graduation requirements	Ways to achieve (teaching process)
	apply them in multidisciplinary environment;	Siguang) SearchingActivity,CompassLecture, the Country Activities, Engineering Design competition, etc.
12	Candidates are required to have the consciousness of independent and life-long learning, and be capable of learning sustainably and adapting to the development.	<p>① Courses: MoralityEducationand Fundamentals of Law, Principles of Marxism Petroleum Engineering Introduction.</p> <p>②Out-of-class learning: Social Investigation, Military Training, Contest, Invention and Innovation, Research Presentation, College Students Scientific Research Project, Production Practice, Bachelor Thesis(Design), Geology Master(Li Siguang) SearchingActivity, the Country Activities,Physical Education, Community Activities, Public Welfare Activities, etc.</p>

Major Disciplines:Petroleum and Natural Gas Engineering.

Main Courses:Petroleum and Natural Gas Geology, Engineering Mechanics, Mechanical Design, Oil & Gas Development Geology, Petroleum Reservoir Physics, Percolation Mechanics, Petroleum Reservoir Engineering, Petroleum Production Engineering, Drilling and Well Completion, etc.

Lab Experiments:Petroleum Reservoir Physics Experiments, Drilling and Production Experiment, Petroleum Reservoir Engineering Experiment、 Percolation Experiment, Oilfields Chemistry Experiment, etc.

Practical Work: Metal Working Practice, Course Design for Computer Programs, Geological Cognition Practice (BeiDaihe), Geological Teaching Practice (ZiGui), Oil field Teaching Practice (Jiang Han), Course Design for Petroleum Engineering, Production Practice, Bachelor Thesis (Design), etc.

Requirements for Graduation Credits: Drilling and Production Engineering 172.5; Reservoir Engineering 172.

Duration&DegreeGranted:Four years, Bachelor of Petroleum Engineering

Recommended minor: Exploration Engineering of Mineral Resources

Related Specialties: Mining Engineering, Exploration Engineering of Mineral Resources (oil and gas).

石油工程专业课程教学计划表

Course Descriptions of Petroleum Engineering

课程类别 Classification	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/Re s.	研讨 Di s	素质 拓展 Exp									
必修 Compulsory	11706200	马克思主义基本原理 Principles of Marxism	3	48	48						3							
	11706500	毛泽东思想与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	32	16					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					
	21929102	C 语言程序设计 B C Language Programming B	2	32	32		8		8		2							
	20215700	石油工程导论 Professional Introduction Courseware For Petroleum Engineering	1	16	16						1							
	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													
		包括生态学概论为必修课程总计 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 The total credits is 12 credits, including the compulsory courses of introduction to earth science and introduction to ecology, more than 6 credits of innovation & pioneering courses and interdisciplinary courses	10.5	168														
	小计 Sum		44	788	604	16	8	56		11	7	8	3	0	0	0	0	

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp										
学科基础课程 Disciplinary Fundamental Courses	212127*2	高等数学 B Advanced Mathematics B	10	160	160						4	6							
	212130*3	大学物理 C College Physics C	6	96	96							3.5	2.5						
	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								
	21212802	线性代数 B Linear Algebra B	2.5	40	40					高等数学 Advanced Mathematics			2.5						
	21213502	概率论与数理统计 B Probability Theory and Mathematics Statistics B	2.5	40	40					高等数学 Advanced Mathematics			2.5						
	20119700	地质学基础 Foundations geology	4	64	64		8				4								
	20105200	矿物岩石学 B Mineralogy and Petrology	2.5	40	32	8				地质学基础 Foundations geology		2.5							
	21130401	测量学 A Surveying A	2	32	32		16					2							
	21201902	复变函数与积分变换 B Complex Variable Function and Integral Transformation B	2.5	40	40					高等数学 Advanced Mathematics			2.5						
	20732302	电工与电子技术 B Electrical and Electronic Technology B	3.5	56	56		8							3.5					
	20538302	工程力学 B Engineering Mechanics B	4.5	72	72		8							4.5					
	20520700	流体力学 fluid mechanics	2.5	40	40										2.5				
	20732202	机械设计基础 B Basis of Mechanical Designing B	2	32	32		8							2					
20327303	有机化学 C Organic Chemistry C	2	32	32		0			大学化学 B College Chemistry B				2						

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp																				
																			1	2	3	4	5	6	7	8			
小计			53	884	816	88	48											13	15.5	10	12	2.5	0	0	0				
Sum																													
专业主干课 Main Specialty Courses	钻采工程方向	20222600 油藏工程* Petroleum Reservoir Engineering	2.5	40	40		24																						
		20222700 油气开发地质学* Oil & Gas Development Geology	2.5	40	40		16																						
		20222000 油(气)层物理学 Petroleum Reservoir Physics	2	32	32		16						2																
		20222100 石油渗流力学 Transfusion Mechanics of Petroleum	1.5	24	24		8						1.5																
		20223000 油气钻井与完井工程 Drilling & Well Completion Engineering	2.5	40	40		12																						工程力学 B Engineering Mechanic B 流体力学基 础 Basis of Hydrodyna mics
		20223100 采油(气)工程 Petroleum-Production Engineering	2.5	40	40		12																						
		20326600 油田化学 Oil Field Chemistry	2	32	32																								
	油藏工程方向	20222600 油藏工程* Petroleum Reservoir Engineering	2.5	40	40		24																						
		20222700 油气开发地质学* Oil & Gas Development Geology	2.5	40	40		16																						
		20222000 油(气)层物理学 Petroleum Reservoir Physics	2	32	32		16						2																
		20222100 石油渗流力学 Transfusion Mechanics of Petroleum	1.5	24	24		8						1.5																
		20223000 油气钻井与完井工程 Drilling & Well Completion Engineering	2.5	40	40		12																						工程力学 B Engineering Mechanic B 流体力学基 础 Basis of Hydrodyna mics

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp									
	20223100	采油(气)工程 Petroleum-Production Engineering	2.5	40	40		12								2.5			
	20209400	油气储层地质学 Oil and Gas Reservoir Geology	2	32	28	4									2			
	20222302	石油及天然气地质学B Petroleum and Natural Gas Geology B	3	48	48		16						3					
	小计 Sum	钻采工程方向 Drilling and Production Engineering	15.5	248	248	0	88				0	0	0	3.5	5	7	0	0
		油藏工程方向 Reservoir Engineering	18.5	304	300	4	104				0	0	0	3.5	8.5	7	0	0
专业选修课 Specialty Elective Courses	钻采工程方向 Drilling and Production Engineering	具体见专业选修课列表 Details in the list of elective courses	18	288														
	油藏工程方向 Reservoir Engineering	具体见专业选修课列表 Details in the list of elective courses	14.5	232														
合计 Sub-total	钻采工程方向 Drilling and Production Engineering		130.5	2028	1628	112	154	8	48	0	22.5	23.5	18	18.5	7.5	7	0	0
	油藏工程方向 Reservoir Engineering		130	2028	1680	116	170	8	48	0	22.5	23.5	18	18.5	11	7	0	0
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 Course Design for Computer Language C	1.5	1.5周							1.5							
	40724602	金工实习B Metal Working Practice B	2	2周										2				
	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) Geological Cognition Practice (BeiDaihe)	2	2周								2						
	40115701	地质教学实习(秭归)A Geological Teaching Practice(ZiGui)A	4	4周										4				
	40218800	油矿教学实习(江汉) Oil field Teaching Practice(Jiang Han)	2	2周												2		
40224500	石油工程课程设计 Course Design for Petroleum Engineering	5.5	5.5周															5.5

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp									
	40214900	生产实习 Production Practice	6	6周													6	
	40218400	毕业论文(设计) Bachelor Thesis(Design)	8	8周														8
	40218600	岩心编录 Core catalog	1	1周													1	
	40224400	石油工程综合技能实训 Comprehensive Skill Training of Petroleum Engineering	2	2周														2
	小计 Sum		37	37周														13.5
创新创业自主学习 Freedom study	ZZ35000S	社会调查 Social Investigation	2															
		其他(学科竞赛、发明创造、科研报告) Others (Contest, Invention, Innovation and Research Presentation)	3															
	小计 Sum		5															
总计 Total		钻采工程方向 Drilling and Production Engineering	172.5	2208 +42周	1628	112	154	8	48	0	25	26.5	18	22.5	9.5	10	8	13.5
		油藏工程方向 Reservoir Engineering	172	2200 +42周	1680	116	170	8	48	0	25	26.5	18	22.5	13	10	8	13.5
公开选修课程表 Specialty Elective Courses	20222800	石油工程 HSE HSE of Petroleum Engineering	2	32													2	
	20206300	石油技术经济学 Economics of Petroleum Technique	2	32	24	8											2	
	20219200	石油工程计算机应用 Application of Computer in Petroleum Engineering	2.5	40	20	20				C语言课程 设计 Course Design for Computer Language C								2
	20617800	地球物理原理(石油地震+石油测井) Geophysics Principle	3	48	48		16										3	
	20223200	(油气) 储层保护技术 Reservoir Protection Technology	2	32	32												2	
	20222900	岩石力学在石油工程中的应用 Application of Rock Mechanics in Petroleum Engineering	2	32	32										2			

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp									
	20223300	信息化技术在油田开发中的应用 Application of Information Technology in Oilfield Development	2	32	16	16								1				
	20223400	非常规油气藏开发理论与技术 Theory and Technology of Unconventional Reservoir Development	2	32	32									2				
	20223500	石油工程实践案例分析 Case Study of Petroleum Engineering Practice	2	32	32										2			
钻采工程方向 Drilling and Production Engineering	20223600	油气井增产增注技术 Production and Injection Stimulation Technology of Well	2	32	32									2				
	20207200	提高石油采收率原理 Enhanced Oil Recovery	2	32	26	6								2				
	20230500	水平井技术 Technique of Horizontal Wells	2	32	32		8			油气钻井与完井工程 Drilling & Well Completion Engineering							2	
	20210500	钻井液工艺学 Drilling Fluids Technology	2	32	32					油气钻井与完井工程 Drilling & Well Completion Engineering							2	
	20223700	海洋钻采工程 Offshore Drilling Engineering	2	32											2			
	20223800	钻采工程方案设计 Program Design of Drilling and Production Engineering	2	32											2			
	20223900	地热能开发与应用 Geothermal Development and Utilization	2	32											2			
	20224000	热储工程 Geothermal Reservoir Engineering	2	32											2			
	20224100	油气藏动态分析 Dynamic Analysis of Petroleum Reservoir	2	32	32											2		
	20224200	气藏工程 Gas Reservoir Engineering	2	32	32										2			
油藏工程方向 Reservoir Engineering	20201600	地下地质学 Subsurface Geology	2	32	22	10							2					
	20209100	油藏精细描述 Precise Reservoir Description	2	32	26	6									2			

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crts	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/Re s.	研讨 Di s	素质 拓展 Exp									
ne ri ng	20201400	沉积相与沉积环境 Sedimentary Facies and Environment	2	32	30	2								2				
	20117000	沉积岩研究方法 Techniques in Sedimentary Petrology	2	32	24	8							2					
	20219400	生产测井 Production logging	2	32	32										2			
	20206500	试井分析 Well Testing	2	32	24	8									2			
	20209200	油藏数值模拟 Reservoir Simulation	2	32	16	16								2				
创新创业类课程	20224300	石油工程综合技能 Comprehensive Skills in Petroleum Engineering	2	32	16	16								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。

说明：每一个学生必须选定一个方向，在所选方向的完成学分不低于8学分。钻采方向：完成专业选修课总学分为18学分；油藏工程方向：完成专业选修课总学分为14.5学分。

石油工程专业课程分类统计

Course Classified Statistics of Petroleum Engineering

课程类别 course type	通识教育课程 Liberal Education Courses		大类平台课+学科基础课 Platform&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 Major	选修 Minor							
统计 total									
钻采工程方向 (Drilling and Production Engineering)									
学时/学分 Credit hours/credits	596/32	168/12	884/53	320/15.5	368/18	37周	5周	2208+42周	172.5
学分所占比例 Credits proportion	25.6%		30.7%	9%	10.4%	21.4%	2.9%		100%
油藏工程方向 (Reservoir Engineering)									

学时/学分 Credit hours/ credits	596/32	192/12	884/53	376/19	312/14.5	37 周	5 周	2200+42 周	172
学分所占 比例 Credits proportion	25.6%		30.8%	10.8%	8.4%	21.5%	2.9%		100%

石油工程专业辅修课程教学计划表

Course Descriptions of Petroleum Engineering (Minor)

课程类别 Classification	课程编号 Code	课程名称 Course Name	学分 Crs	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/Res.	实验/科研实践 Lab/Res. Dis	研讨 Dis	素质拓展 Exp												
Disciplinary Fundamental																					
	小计 Sum																				
Main Specialty Courses 专业主干课	20208800	油藏工程 Petroleum Reservoir Engineering	2.5	40	40			24												2.5	
	20209600	油气开发地质学 Oil & Gas Development Geology	2.5	40	40															2.5	
	20208900	油(气)层物理学 Petroleum Reservoir Physics	2	32	32			16							2						
	20206400	石油渗流力学 Transfusion Mechanics of Petroleum	1.5	24	24									1.5							
	20209700	油气钻井与完井工程 Drilling & Well Completion Engineering	2.5	40	40			12												2.5	
	20200800	采油(气)工程 Petroleum-Production Engineering	2.5	40	40			12												2.5	
	20309800	油田化学 Oil Field Chemistry	2	32	32														2		
	20209400	油气储层地质学 Oil and Gas Reservoir Geology	2	32	28	4													2		
	小计 Sum			17.5	280	276	4	64	0						3.5	6.5	2.5	5			
合计 Sub-total			17.5	280	276	4	64	0						3.5	6.5	2.5	5				
实践环节 Practical Work	40105800	三峡地质教学实习(秭归) Geological Teaching Practice in Three Gorges (ZiGui)	4	4周															4		

学校与企事业单位联合培养阶段实施方案

培养目标：

石油工程专业培养具有扎实自然科学及专业理论基础，拥有良好人文情怀和社会责任感，具备基本地质工作技能，熟悉专业领域的工作流程，具有良好交流和沟通能力、组织管理能力，能够在石油工程领域解决复杂工程问题的石油工程师。

培训重点：

石油工程专业在学校与企事业单位联合培养阶段以提升学生实践能力为培训重点，主要包括：

1. 企事业单位工作管理实践培训：通过深入油田或科研院所，熟悉并掌握专业领域的工作流程、管理制度，提升学生专业认知及生产管理能力。

2. 石油工程专业技能训练：通过生产实习环节，在校内导师和企业导师共同指导下，开展专业技能训练，包括现场操作，数据资料收集、整理和分析等，学会基本操作流程、专业图件编制、报告编写等。

3. 设计及研究能力训练：学生在校内导师和企业导师共同指导下，结合自己的工作基础和兴趣，选择一个专题进行重点工作和研究，并以此完成毕业设计（论文）。

培训阶段：

1. 大三阶段进行企事业单位工作管理实践培训。主要在掌握一定专业知识的基础上，集体进入企事业单位，熟悉专业领域的工作流程、管理制度等。

2. 大三阶段和大四阶段过渡期间，学生各自跟随校内指导老师进入企事业单位，在学校和企业导师共同指导下开展石油工程专业技能训练，根据具体情况，凝练科学问题，并开展资料收集，为毕业设计做准备。

3. 大四阶段进行设计及研究能力训练。在学校和企业导师指导下，在生产实习的基础上，进一步开展科学问题凝练，并开展相应研究，最终完成毕业设计，为就业打下坚实基础。

课程及学分设置:

课程名称	学分	课内总学时	内容	
			序次	教学基本内容、重点、难点
企事业单位工作管理实践培训	1	1周	1	江汉油矿教学实习 进驻江汉油田,熟悉企业单位结构、专业领域工作流程和管理制度(1周) 难点:了解油田架构、熟悉钻完井及采油工艺及相关规范。
石油工程专业技能训练	8	9周	1	制定生产实习计划(1周) 重点:依据校内指导老师的项目实际,制定开展生产实习的具体计划,严格把控时间,避免拖拉现象出现。
			2	凝练科学问题,拟定工作项目(1周) 重点:进驻企事业单位,在企业导师指导下,凝练出科学问题,拟定生产实习工作项目。
			4	资料收集整理(4周) 重点:在学校导师和企业导师的指导下,进一步熟悉专业工作流程,并围绕科学问题开展相关资料的收集整理。
			2	生产实习报告编写(2周) 重点:分析资料,完成生产实习报告编写,训练专业写作能力。
设计及研究能力训练	10	10周	毕业设计	在学校导师和企业导师的共同指导下,开展毕业设计,具体包括选题、开题、资料收集整理与分析、撰写论文、毕业答辩等环节(10周)。

考核标准及成绩评定:

作业评价细则及得分				
100~90	89~80	79~70	69~60	59~0
按时交作业;前期调研条理清楚,设计方案合理,研究内容详实,图件精美;最终成果与预期目标吻合;PPT版式合理,格式规范等。	按时交作业;前期调研、设计方案等比较清晰,研究内容比较详实,图件良好;成果实现初期目标;PPT版式比较合理,格式比较规范等。	按时交作业;前期调研、设计方案等基本清晰,研究内容基本合理,图件基本可以反映观点;最终成果实现初期目标;PPT版式比较合理,格式基本规范等。	短时迟交作业;前期调研、设计方案等基本清晰,研究内容偏少,图件合格;最终成果基本实现初期目标;PPT版式基本合理,格式基本规范等。	不交或严重超时迟交作业;前期调研、设计方案等不清晰,研究内容不足,图件表达不清;最终成果达不到初期目标;PPT版式不合理,基本格式不规范等。

工作、生活及安全保障管理:

1. 后勤工作安排

学生野外实践期间,后勤工作中物资的准备清单如下:

项目	必备物品
医药用品	晕车药、四季感冒片、止痛药、消毒水、盐酸小檗碱片(止泻)安瑞克(发烧)、补中益气丸(防中暑)、牛黄解毒丸(防虫,防上火)、藿香正气水、红花油、葡萄糖、创口贴、棉棒、纱布、花露水
日常用品	换洗衣物、鞋袜、洗簌用品、洗衣液、钱包、银行卡等
	毛巾、水杯、卫生纸、伞等
	手机、电脑、相机、充电器等
	面包、巧克力、压缩饼干、饮用水等
必备证件	身份证、学生证、学校证明、车票等
其他	地图、罗盘、放大镜、地质锤、手电筒等

2. 学生管理制度

1) 指导老师应对活动全权负责,遇到意外事故应及时采取措施,保证学生实习的顺利进行。

2) 各学生必须遵照指导老师的安排,认真按计划完成各项工作,不得擅自行动,如果需要离开,应及时向指导老师报告。

3) 学生实习时,应衣着得体,举止文明,谦虚有礼,自觉维护中国地质大学(武汉)的声誉和形象,保持大学生应有的素质和健康的精神风貌,谦虚谨慎,不耻下问。

4) 每位学生注意自身安全,不得擅自离开。在实习过程或日常生活应提高警惕,保管好自己的财务,注意个人饮食卫生和交通安全。

5) 各项事务应由集体讨论决定,实行少数服从多数的民主集中制原则,学生要服从指导老师的安排。

3. 安全管理

1) 学校统一为每位学生购买野外工作人身保险,保险时间涵盖整个生产实习周期。

2) 学生在出发前应有一定的心理准备,学生必须明确生产实习期间的艰苦。如果有不适应当地生活条件,应当尽快自我调节,以免给身体造成不必要的伤害。

- 3) 学生在野外实践过程中严格遵守当地法律法规和民俗习惯，避免与当地群众发生矛盾。
- 4) 在身体不适的情况下应及时向指导老师反映，不能隐瞒病情。
- 5) 牢记紧急电话：如当地的医院，公安局，政府和支持单位的电话号码和其它紧急号码（报警：110；急救：120；火警：119）。