

环境工程

一、培养目标

本专业旨在培养具有扎实而系统的专业基础理论和专业知识与工程实践能力、全面的科学文化综合素质、良好的政治思想和道德品质、较高的外语和计算机应用能力的环境工程专业高级人才，能进行水污染控制、大气污染控制、固体废物污染控制、物理性污染控制等领域的工程设计和运行管理，也能从事上述领域的科学研究、教学和技术管理工作。

二、基本规格要求

1. 要求受到良好的科学思维、科学实验等基本训练，具有较好的人文社会科学素养、较强的社会责任感和良好的职业道德。

2. 要求掌握环境工程的基本理论、基本知识和基本技能，强化环境化学、环境毒理学、环境监测、环境评价与规划等方面的应用能力。

2. 要求掌握主要环境污染控制工程（包括水、气、固、物理性污染等污染控制工程）的设计能力、设备选型能力、设备与工艺流程操作与运行管理能力、污染监测与规划能力。要求了解环境工程的理论前沿、应用前景和最新发展动态，并具有以此分析环境保护技术的发展现状和趋势的能力。

4. 要求具有较熟练的外语和计算机应用能力，掌握文献资料查询及运用现代信息技术获取相关信息的基本方法；具有一定实验设计的能力，归纳、整理、分析实验结果的能力，撰写论文和参与学术交流的能力。

三、培养特色

理工文融合，教学和科研结合，与国际接轨，培养创新型环境科学与工程人才。

四、学制、毕业基本要求及学位授予

1. 本科基本学制 4 年，弹性学习年限 3—6 年，按照学分管理制度管理。

2. 环境工程专业学生毕业最低学分数为 155 学分，其中各类别课程及环节要求学分数如下表：

课程类别	通识必修	学门核心	学类核心	专业核心	专业选修	通识选修	集中实践	合计
学分数	27	24	31	12	21	8	32	155

3. 学生修满培养方案规定的必修课、选修课及有关环节，达到规定的最低毕业学分数，并修完规定必修但不记学分的所有课程和环节，德、智、体合格，即可毕业。满足学位授予相关文件要求的，授予工学学士学位。

五、课程设置及学分分布

（一）通识教育课程〔必修 27 +（6）学分 + 选修 8 学分〕

通识教育课程包括必修和选修两部分。通识选修课程按《湖南大学通识选修（文化素质教育）课程方案》实施，通识必修课程如下：

编码	课程名称	学分	备注
GE01101	毛泽东思想和中国特色社会主义理论体系概论	3+ (3)	
GE01039	思想道德修养与法律基础	1.5+ (1.5)	
GE01100	形势与政策	0.5+ (1.5)	
GE01102	中国近现代史纲要	2	
GE01103	马克思主义基本原理 (上)	2	
GE01104	马克思主义基本原理 (下)	2	
GE01012 (-15)	大学英语	8	
GE01088	计算机基本能力测试	0.5	
GE01093	计算机导论与程序设计	2.5	
GE01107 (-13)	心理素质与生涯发展	1	
GE01089 (-92)	体育	4	

(二) 学门核心 (24 学分)

编码	课程名称	学分	备注
GE03025 (26)	高等数学 A	10	
GE03003	线性代数 A	3	
GE03004	概率论与数理统计 A	3	
GE03005 (06)	普通物理 A	6	
GE03007 (08)	普通物理实验 A	2	

(三) 学类核心 (31 学分)

编码	课程名称	学分	备注
ES04001	无机化学 A	4	
ES04002	有机化学 A	4	
ES04005	物理化学 A	4	
GE02018	土木工程制图	2	
ES05004	基础化学实验	2	
ES04003	工程力学	2	
ES04004	流体力学	2	
ES05008	环境监测与分析化学	4	
ES05006	环工原理与设备	4	
ES05009	环境工程微生物	3	

(四) 专业核心 (12 学分)

编码	课程名称	学分	备注
ES05011	大气污染控制工程	3	
ES05012	水污染控制工程	3	
ES05019	固体废物处理与处置	3	
ES05020	环境影响评价与规划	3	

(五) 选修课 (34 学分, 选满 21 学分)

编码	课程名称	学分	备注
ES06044	环境化学	2	
ES06018	生态学	2	
ES06045	给水排水管道工程	2	
ES06006	环境工程 CAD	2	
ES06010	环境系统工程	2	
ES06009	环境生物学	2	
ES06013	环境专业英语	2	
ES06015	景观生态学	2	
ES06021	物理性污染控制 (噪声)	2	
ES06017	生态工程	2	
ES06019	环境土壤学	2	
ES06002	环境地质学	2	
ES06040	环境地理学	2	
ES06001	地理信息系统	2	
ES06041	环境工程技术经济	2	
ES06016	环境与发展	2	
ES06039	环境问题与对策 (新生研讨课)	1	
ES06042	环境工程技术前沿 (高级研讨课)	1	

说明: 1) 本专业选修不低于 10 学分, 其他学分可在全校范围的选修课内任选;

2) 在读期间参加学科竞赛、公开发表学术论文经学院认定 (详见《湖南大学环境科学与工程学院实践创新学分认定标准》), 可以替代专业选修学分, 但最高不超过 2 个学分。

(六) 集中实践 (32 学分)

编码	课程名称	学分	备注
GE09030	中文写作实训	1	
GE09028	英文应用写作实训 A	1	
ES10006	公民教育与社会实践	2	
GE09006	金工实习 A	2	
ES10004	专业认知实习	1	
ES10002	专业生产实习	2	
ES10003	毕业实习 (导师课程)	2	
ES10006	环工原理课程设计	2	
ES10007	水污染控制课程设计	2	
ES10008	大气污染控制课程设计	2	
ES10009	环境影响评价与规划课程设计	3	
ES10010	毕业论文或设计	12	

六、学院课程讲授团队汇总表

课程名称	类型	主讲教授 (非本院开设仅需填开课单位)	参与教授
环境监测与分析化学	学类核心	牛承岗、彭艳蓉	龚继来、汤琳
环工原理与设备	学类核心	胡天觉、杨春平	李珊红、董浩然、单文伟
环境工程微生物	学类核心	黄丹莲、徐卫华、张亚新	杨朝晖、牛秋雅
水污染控制工程	专业核心	李小明、杨麒	张长、文嘉
大气污染控制工程	专业核心	翟云波、李彩亭	李珊红、单文伟
环境影响评价与规划	专业核心	李欣、梁婕	袁兴中、黄瑾辉
固体废物处理与处置	专业核心	陈桂秋、陈耀宁	黄彬彬
环境生物学	专业选修	刘红玉、牛秋雅	胡天觉、刘云国
环境问题与对策	专业选修	曾光明、刘云国、李彩亭、袁兴中、李小明、杨春平、牛承岗、李忠武	
环境工程技术前沿	专业选修	黄瑾辉、龚继来、翟云波、杨麒、梁婕、黄彬彬、董浩然、文嘉	
生态学	专业选修	刘云国、徐卫华	曾光明、彭艳蓉
环境土壤学	专业选修	陈桂秋、文嘉	胡天觉、杨朝晖、张盼月
景观生态学	专业选修	李忠武、李欣	曾光明、徐卫华
环境地质学	专业选修	翟云波、李珊红	李忠武、刘红玉
环境工程 CAD	专业选修	杨麒、李小明	李彩亭、张长
环境化学	专业选修	陈耀宁、董浩然	袁兴中、李欣
环境地理学	专业选修	李忠武、张亚新	李欣、翟云波
地理信息系统	专业选修	李忠武、文嘉	李晓东、梁婕
给水排水管道工程	专业选修	黄瑾辉、梁婕、李晓东	曾光明、张长
环境专业英语	专业选修	黄彬彬、张亚新	汤琳、李小明
生态工程	专业选修	李欣、龚继来	刘云国、牛秋雅、钟华
物理性污染控制 (噪声)	专业选修	李珊红、董浩然	李彩亭、翟云波
环境工程技术经济	专业选修	杨朝晖、张长	杨春平、杨麒
环境系统工程	专业选修	曾光明、李晓东	梁婕、张亚新
环境与发展	专业选修	汤琳、李晓东	袁兴中、黄丹莲

七、专业责任教授

序号	姓名	职称	学历学位	专业特长	承担授课课程
1	曾光明	教授	博士	城市生活垃圾综合利用、环境系统分析等	环境问题与对策 (专业选修)、景观生态学 (专业选修)、环境系统工程 (专业选修)、生态学 (专业选修)

Environmental Engineering

I . Program Objective

The discipline aims at training Environmental Engineering specialized top talents with systematic fundamental professional theory and engineering practice ability, comprehensive scientific and cultural quality, good political thought and moral trait, high communication skill using English and computational operating ability. Students would be able to conduct the engineering design and operational management in Water Pollution Control, Air Pollution Control, Solid Waste Pollution Control, Physical Pollution Control, and so on.

Graduates would perform scientific research, lecturing and technical management work in the above areas.

II . Basic Specifications

The students are required to

1. Be trained with good scientific logic and experiments, possess good quality of humanistic and social science, and have relative strong social responsibility and professional ethics.

2. Master fundamental theory, knowledge and skill in environmental engineering, strengthen practice ability in areas of environmental chemistry, environmental toxicology, environmental monitoring, environmental impact assessment and planning, and so on.

3. Possess the ability of design, equipment selection, equipment and process operation and management, pollution monitoring and civic engineering planning in the process of environmental pollution control (including water, air, solid waste and noise pollution control projects); understand the frontier theory, application prospect and up-to-date development of environmental engineering, and have the ability to analyze the state of the art the trend of environmental protection technologies.

4. Have fluent English and computer skills; master fundamental methods of literature research and obtaining relative information utilizing modern technologies; be able to design experiments, to conclude, sort and analyze results, and to write scientific papers and participate in academic exchanges.

III . Program Features

Cultural fusion, teaching and research combination, in line with international conventions, cultivating innovative environmental science and engineering talents.

IV . Academic structure, graduation requirements and degree awarding

1. Duration for undergraduates is normally 4 years with a flexible time between 3 to 6 years, according to the credit system management.

2. The minimum credit for students graduating under the environmental engineering program is 155, with the specifications of each course listed below:

Course Type	General Required	Phylum Core	Category Core	Discipline Core	Discipline Optional	General Optional	Practice	Total
Credit	27	24	31	12	21	8	32	155

3. Students can be deemed to graduate upon completion of all required, optional and extracurricular courses stipulated in the program scheme with the minimum graduation credits, meanwhile completing all required non-credits courses. Those meet the degree conferring-related documents will be awarded the Bachelor of Engineering Degree.

V. Curriculum setting and credit distribution

1. General Education Courses [required 27+(6) + elective 8 credits]

The general education courses consist of required courses and elective courses. General education electives are designed according to the *Curriculum Design of General Education Electives of Hunan University*. Required general education courses are illustrated in the following table.

Code	Course Title	Credit(s)	Remarks
GE01101	Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics	3+(3)	
GE01039	Moral Cultivation and Law Basics	1.5+(1.5)	
GE01100	Current Situation and Policies	0.5+(1.5)	
GE01102	Outline of Modern Chinese History	2	
GE01103	Fundamentals of Marxism I	2	
GE01104	Fundamentals of Marxism II	2	
GE01012(-15)	College English	8	
GE01088	Computer Proficiency Test	0.5	
GE01093	Introduction to Computer Science and Programming	2.5	
GE01107(-13)	Psychological Health & Career Planning	1	
GE01089(-92)	Physical Education	4	

2. Phylum Core (24 credits)

Code	Course title	Credit(s)	Remarks
GE03025(26)	Advanced Mathematics A	10	
GE03003	Linear Algebra A	3	
GE03004	Probability and Statistics A	3	
GE03005(06)	General Physics A	6	
GE03007(08)	General Physics Experiment A	2	

3. Category Core (31 credits)

Code	Course title	Credit(s)	Remarks
ES04001	Inorganic Chemistry A	4	
ES04002	Organic Chemistry A	4	
ES04005	Physical Chemistry A	4	
GE02018	Civil Engineering Drawing	2	
ES05004	Fundamental Chemistry Experiment	2	
ES04003	Engineering Mechanics	2	
ES04004	Hydromechanics	2	
ES05008	Environmental Monitoring and Analytic Chemistry	4	
ES05006	Environmental Engineering Principle and Equipments	4	
ES05009	Environmental Engineering Microbiology	3	

4. Discipline Core (12 credits)

Code	Course title	Credit(s)	Remarks
ES05011	Air Pollution Control Engineering	3	
ES05012	Water Pollution Control Engineering	3	
ES05019	Solid Waste Treatment and Disposal	3	
ES05020	Environmental Impact Assessment and Planning	3	

5. Optional Course (34 credits, choose 21 credits)

Code	Course title	Credit(s)	Remarks
ES06044	Environmental Chemistry	2	
ES06018	Ecology	2	
ES06045	Water Supply and Drainage Pipeline Engineering	2	
ES06006	Environmental Engineering CAD	2	
ES06010	Environmental Systems Engineering	2	
ES06009	Environmental Microbiology	2	
ES06013	Environment Professional English	2	
ES06015	Landscape Ecology	2	
ES06021	Physical Pollution Control (Noise)	2	
ES06017	Ecological Engineering	2	
ES06019	Environmental Edaphology	2	
ES06002	Environmental Geology	2	
ES06040	Environmental Geography	2	
ES06001	Global Information System	2	
ES06041	Environmental Engineering and Technical Economics	2	
ES06016	Environment and Development	2	
ES06039	Environmental Problems and Strategies (Freshman Seminar)	1	
ES06042	Environmental Engineering Technical Frontier (Senior Seminar)	1	

Note: 1) The professional optional courses are required not less than 10 credits, while the other credits can be selected from the optional courses within the university-wide;

2) Those who satisfy either conditions of participating in academic competition and publishing paper during study can replace the professional optional credits, but no more than 2 credits. Please review: the practical innovation credits recognized standards by College of Environmental Science & Engineering of HNU.

6. Practice (32 credits)

Core	Course title	Credit(s)	
GE09030	Chinese Writing Training	1	
GE09028	English Writing Training	1	
ES10006	Civilian Education and Social Practice	2	
GE09006	Metal Working Practice	2	
ES10004	Major Cognitive Practice	1	
ES10002	Major Production Practice	2	
ES10003	Graduation Practice (Supervision)	2	
ES10006	Curriculum Design of Environmental Engineering Principle	2	
ES10007	Curriculum Design of Water Pollution Control	2	
ES10008	Curriculum Design of Air Pollution Control	2	
ES10009	Curriculum Design of Environmental Impact Assessment and Planning	3	
ES10010	Graduation Thesis	12	

VI. College Course Lecturing Team

Course Title	Type	Principal Lecturer	Joining Lecturer
Environmental Monitoring & Analytic Chemistry	Category Core	Niu Chenggang, Peng Yanrong	Gong Jilai, Tang Lin
Environmental Engineering Principle & Equipments	Category Core	Hu Tianjue, Yang Chunping	Li Shanhong, Dong Haoran, Shan Wenwei
Environmental Engineering Microbiology	Category Core	Huang Danlian, Xu Weihua, Zhang Yaxin	Yang Zhaohui, Niu Qiuya
Water Pollution Control Engineering	Discipline Core	Li Xiaoming, Yang Qi	Zhang Chang, Wen Jia
Air Pollution Control Engineering	Discipline Core	Zhai Yunbo, Li Caiting	Li Shanhong, Shan Wenwei
Environmental Impact Assessment and Planning	Discipline Core	Li Xin, Liang Jie	Yuan Xingzhong, Huang Jinhui
Solid Waste Treatment and Disposal	Discipline Core	Chen Guiqiu, Chen Yaoning	Huang Binbin
Environmental Biology	Discipline Optional	Liu Hongyu, Niu Qiuya	Hu Tianjue, Liu Yunguo
Environmental Problems and Strategies	Discipline Optional	Zeng Guangming, Liu Yunguo, Li Caiting, Yuan Xingzhong, Li Xiaoming, Yang Chunping, Niu Chenggang, Li Zhongwu	
Environmental Engineering Technical Frontier	Discipline Optional	Huang Jinhui, Gong Jilai, Zhai Yunbo, Yang Qi, Liang Jie, Huang Binbin, Dong Haoran, Wen Jia	
Ecology	Discipline Optional	Liu Yunguo, Xu Weihua	Zeng Guangming, Peng Yanrong
Environmental Edaphology	Discipline Optional	Chen Guiqiu, Wen Jia	Hu Tianjue, Yang Zhaohui, Zhang Panyue
Landscape Ecology	Discipline Optional	Li Zhongwu, Li Xin	Zeng Guangming, Xu Weihua
Environmental Geology	Discipline Optional	Zhai Yunbo, Li Shanhong	Li Zhongwu, Liu Hongyu
Environmental Engineering CAD	Discipline Optional	Yang Qi, Li Xiaoming	Li Caiting, Zhang Chang
Environmental Chemistry	Discipline Optional	Chen Yaoning, Dong Haoran	Yuan Xingzhong, Li Xin
Environmental Geography	Discipline Optional	Li Zhongwu, Zhang Yaxin	Li Xin, Zhai Yunbo
Global Information System	Discipline Optional	Li Zhongwu, Wen Jia	Li Xiaodong, Liang Jie
Water Supply and Drainage Pipeline Engineering	Discipline Optional	Huang Jinhui, Liang Jie, Li Xiaodong	Zeng Guangming, Zhang Chang
Environmental Professional English	Discipline Optional	Huang Binbin, Zhang Yaxin	Tang Lin, Li Xiaoming
Ecological Engineering	Discipline Optional	Li Xin, Gong Jilai	Liu Yunguo, Niu Qiuya, Zhong Hua

Cont

Course Title	Type	Principal Lecturer	Joining Lecturer
Physical Pollution Control (Noise)	Discipline Optional	Li Shanhong, Dong Haoran	Li Caiting, Zhai Yunbo
Environmental Engineering & Technical Economics	Discipline Optional	Yang Zhaohui, Zhang Chang	Yang Chunping, Yang Qi
Environmental System Engineering	Discipline Optional	Zeng Guangming, Li Xiaodong	Liang Jie, Zhang Yaxin
Environment and Development	Discipline Optional	Tang Lin, Li Xiaodong	Yuan Xingzhong, Huang Danlian

VII. Professional Responsible Professors

No.	Name	Title	Education	Specialty	Courses undertaken
1	Zeng Guangming	Professor	Ph. D	Comprehensive Utilization of Urban Living Garbage, Environ- mental System Analysis	Environmental Problems and Strate- gies (Optional), Landscape Ecology (Optional), Environmental System Engineering (Optional), Ecology (Op- tional)

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