**《大气污染控制理论与技术》课程教学大纲**

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| 课程基本信息（Course Information） |
| 课程代码（Course Code） | X160513 | \*学时（Credit Hours） | 32 | \*学分（Credits） | 2 |
| \*课程名称（Course Name） | （中文）《大气污染控制理论与技术》 |
| （英文）Air Pollution Control Theory and Technology |
| 课程性质(Course Type) | 硕士专业课 |
| 授课语言(Language of Instruction) | 英文 (English) |
| \*开课院系（School） | 低碳学院(China-UK Low Carbon College) |
| 先修课程（Prerequisite） |  |
| 授课教师（Teacher） | 赵岳 (Zhao Yue) | 课程网址(Course Webpage) |  |
| \*课程简介（Description） | （中文）《大气污染控制理论与技术》（英文课程）将介绍大气污染的形成机制、环境和健康影响，以及典型污染物（如工业烟气、机动车尾气等）控制的基本原理及典型技术。该课程将从涵盖大气污染化学、污染气象学、气溶胶物理化学、气溶胶力学、化工原理几个方面的教学内容。该课程的教学将帮助学生理解和认识大气污染控制的基本概念、原理和思路。 |
| \*课程简介（Description） | （英文）The course of Air pollution Control Theory and Technology will address the key atmospheric processes leading to air pollution, the environmental, climatic, and health impacts of air pollution, as well as the main treatment technology and mechanisms for the pollutant removal in industrial flue gas and vehicle exhaust. It will include the knowledge across disciplines including atmospheric pollution chemistry, pollution meteorology, [aerosol chemistry, aerosol mechanics](http://www.baidu.com/link?url=Rc9_xHQK6dqc7PBH-Y8tX8nIFad2JfaDsHP_nLbBFMhrQ1W4XzmrhOLfNsOxYEJxl5dVPnQ8kDIMmJz16yEcH0eq7-FOoiNBtTQ-u_Fkl27Q3LtjbHZwJGf3iHSZSAIB), and [principles of chemical engineering](http://www.baidu.com/link?url=LxuD1q4XRF7f2Fsl-w1vz_Y-uoEHpDtczPcw73f27rQKHWwmc5MNVwrC2Clbyvrfhs5VACsJlRNK_2NzR6kHiKG6poYh77c-cbqsFZ8cX1uZa7J4feeGP_c7OUFsjfAh0X3_tjPM6IShD_TBBAyUCa). This course will help the students to understand the sources, processes, impacts of major air pollutants and air pollution, as well as the basic concepts, mechanisms, and method of the air pollution control. |
| 课程教学大纲（course syllabus） |
| \*学习目标(Learning Outcomes) | 1. Understand the physical and chemical processes that control the atmospheric fate of air pollutants and formation of air pollution.2. Understand the typical air pollutants removal theory and technology.3. Learn to find a proper solution for the air pollution control. |
| \*教学内容、进度安排及要求(Class Schedule& Requirements) |

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| 教学内容 | 学时 | 教学方式 | 作业及要求 | 基本要求 | 考查方式 |
| The structure of atmosphere; The source and properties of major air pollutants  | 4 | 上课/PPT | Quiz | Understand the structure of atmosphere, and sources and properties of major sulfur-, nitrogen-, and carbon-containing air pollutants | Presentation and Report  |
| Atmospheric photochemistry and ozone pollution  | 4 | 上课/PPT | Homework | Understand the key photochemical processes of air pollutants in the atmosphere and their relations to ozone pollution | Presentation and Report |
| Atmospheric multiphase chemistry and aerosol pollution | 4 | 上课/PPT | Quiz | Understand the key multiphase chemical processes involving atmospheric gaseous pollutants and aerosols and their relations to PM2.5 pollution (haze)  | Presentation and Report |
| Effects of air pollution | 4 | 上课/PPT | Homework | Understand the effects of air pollution on human health, visibility, climate | Presentation and Report |
| Control principle and technology of particulates | 4 | 上课/PPT | Quiz | Understand principles and applications of typical particle control technology | Presentation and Report |
| Control principle and technology of SO2 and NOx | 4 | 上课/PPT | Homework | Understand principles and applications of typical removal technology of SO2 and NOx in flue gas and vehicle exhaust | Presentation and Report |
| Control principle and technology of volatile organic compounds (VOCs) | 4 | 上课/PPT | Quiz | Understand principles and applications of typical VOCs removal technology | Presentation and Report |
| Other topics;Student presentation | 4 | 上课/PPT |  |  | Presentation and Report |

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| \*考核方式(Grading) | （成绩构成）[A[ttendance](http://www.baidu.com/link?url=gcKi00cj0Fe-LYL6w3x87iJDo9OK5ZcLs-cPyBaWi_YDpYpLlVzWCov6AKwh5uwJEbXjK40R63ZrQhxgT-MMlhbvCT0yKHqUSTU0hvb2cXK-HL1sXwzMtIaFYG6tpUan)](http://www.baidu.com/link?url=gcKi00cj0Fe-LYL6w3x87iJDo9OK5ZcLs-cPyBaWi_YDpYpLlVzWCov6AKwh5uwJEbXjK40R63ZrQhxgT-MMlhbvCT0yKHqUSTU0hvb2cXK-HL1sXwzMtIaFYG6tpUan) (10%)Quiz and homework (10%)Presentation (40%)Report (40%) |
| \*教材或参考资料(Textbooks & Other Materials) | Nodel de Nevers.《Air Pollution Control Engineering》, McGraw-Hill, 2000. Hao Jiming, et al.,《Air Pollution Control Engineering》(In Chinese), Tsinghua University, 2010.Seinfeld, J. H., and Pandis, S. N.《Atmospheric Chemistry and Physics: From Air Pollution to Climate Change》, Wiley, 2016. |
| 其它（More） |  |
| 备注（Notes） |  |

备注说明：

1.课程大纲一般为教师网上填写，填写要求会自动提示；对于新开课程，需要填着纸质大纲，并经院系教学委员会或专业委员会通过。

2．带\*内容为必填项。

3．课程简介字数为300-500字；课程大纲以表述清楚教学安排为宜，字数不限。