课程详述

COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	**课程名称 Course Title**	**工程学导论 Introduction to Engineering**
2.	**授课院系 Originating Department**	工学院 College of Engineering
3.	**课程编号 Course Code**	COE100
4.	**课程学分 Credit Value**	2
5.	**课程类别 Course Type**	通识选修课程 General Education (GE) Elective Courses **（请保留相应选项 Please only keep the relevant information）**
6.	**授课学期 Semester**	春季 Spring
7.	**授课语言 Teaching Language**	中英双语 English & Chinese **（请保留相应选项 Please only keep the relevant information）**
8.	**授课教师、所属学系、联系方式（如属团队授课，请列明其他授课教师） Instructor(s), Affiliation& Contact （For team teaching, please list all instructors）**	张璧-工学院/机械与能源工程系- zhangb@sustech.edu.cn Bi Zhang-COE- zhangb@sustech.edu.cn
9.	**实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact**	无 NA / 待公布 To be announced / 已确定的实验员/助教联系方式 Please list all Tutor/TA(s) **吴凤霞-工学院-wufx@sustech.edu.cn** Wu Fengxia-COE- wufx@sustech.edu.cn **（请保留相应选项 Please only keep the relevant information）**
10.	**选课人数限额(可不填) Maximum Enrolment （Optional）**	

11.	授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 Total
	学时数 Credit Hours	32				32

12.	先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	无 NA
13.	后续课程、其它学习规划 Courses for which this course is a pre-requisite	无 NA
14.	其它要求修读本课程的学系 Cross-listing Dept.	

教学大纲及教学日历 SYLLABUS

15. 教学目标 Course Objectives

本课程主要介绍工程相关的知识（机械、力学、航空航天、电子、电气、材料、环境、海洋工程、生物医学工程、微电子、系统设计、智能制造、计算机等），培养学生的能力（思维能力、团队合作能力、沟通交流与表达的能力等）和素养（工程伦理、国际视野等）。

本课程以学生能力培养和素养提升为中心，旨在增强学生对工程的认知和了解，激发出学生对于工程师的自豪感和使命感；培养学生发现问题、创造意识、逻辑思维并进行创新实践的能力；为今后的学习和工作打下坚实的基础。

COE 100 aims at providing an introduction to engineering for freshmen. It covers various engineering topics, such as mechanical, mechanics, aerospace, electronics, electrical, materials, environment, marine engineering, biomedical engineering, microelectronics, system design and intelligent manufacturing. It trains students in terms of critical thinking, team working, communication and expression, etc.), as well as engineering literacy on engineering ethics, international vision, etc.

Centered on the cultivatation of students' abilities and the improvement of their literacy, the course aims at enhancing students' cognitive understanding of engineering, inspiring students' sense of pride and mission as an engineer, guiding students to discover problem, generate creative ideas, think systematically, and carry out design practice, developing students' engineering thinking skills and engineering literacy, which lays a solid foundation for their future learning and work.

16. 预达学习成果 Learning Outcomes

通过这门课程的学习，学生将能：

1. 了解我国目前的“卡脖子”问题、解决“卡脖子”问题的困难与挑战及未来工程师如何应对“卡脖子”问题。

2.以国家重大工程为引导增强民族自信，提升工程热情；以社会重大需求为引导，提升格局和视野。

3.理解工程与科学的区别与联系，了解工程师的职业素养和伦理要求，客观评价工程项目中的决策对社会的影响。

4.胜任团队中角色以及面向不同对象进行有效的沟通和交流。

5.高效获取知识和运用知识解决具体技术问题并达成项目目标，培养终身学习能力，具备工程思维能力。

Upon completion of this course, students will be able to:

1.Understand the current “bottleneck” problems in China, the difficulties and challenges in solving the “bottleneck” problems and how engineering will deal with the “bottleneck” problem in the future.

2.Enhance national confidence and enthusiasm guided by major national engineering projects, improve vision to satisfy the society needs.

3.Understand the difference and interconnection between engineering and science, understand engineer's professionalism and engineering ethics, be able to evaluate the social impact of engineering decisions.

4.Be able to play a role in a team and communicate effectively with different people.

5.Be able to acquire knowledge, solve specific technical problems, cultivate life-long-learning ability and engineering thinking skills.

17. 课程内容及教学日历 （如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）
Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)

课程以每周一次讲座的形式讲述工科共性的知识与素养、工科各研究领域的前沿与历史，并辅以课程项目。初步拟定主讲人及题目如下，各学期讲座题目、主讲人及顺序将根据实际情况有所变动。

1.课程概述&讲解课程项目，张璧，2 学时

2.改变世界的重大工程，张璧，2 学时

3.我国目前的“卡脖子”问题，徐政和，2 学时

4.工程伦理与职业道德，姚新，2 学时

5. “双碳”背景下碳捕集的发展战略，张作泰，2 学时

6.先进制造与机器人技术，王峥，2 学时

7.力学与航空航天技术发展及未来，陈十一，2 学时

8.设计驱动式工程创新，熊异，2 学时

9.材料改变世界，李江宇，2 学时

10.人类智慧与机器人智能，孟庆虎，2 学时

11.中国芯 世界梦，于洪宇，2 学时

12.人机界面与未来世界，蒋兴宇，2 学时

13.可信人工智能自主驾驶，郝祁，2 学时

14.海洋强国战略呼唤精英人才，余锡平，2 学时

15-16.课程项目展示，张璧，4 学时

The course is organized in the form of weekly lectures on the common knowledge and literacy of engineering, as well as the frontiers and history of various fields of engineering research, supplemented by term projects. The topic, speaker and order of the lecture may vary according to the actual situation. The preliminary speakers and topics are as follows:

1.Course overview and term project description, Bi Zhang, 2 credit hours

2.World-changing projects, Bi Zhang, 2 credit hours

3. China’s “bottleneck” problems, Zhenghe Xu, 2 credit hours

4. Engineer’s responsibility and professional ethics, 2 credit hours

5.Development strategy of carbon capture in dual carbon background, Zuotai Zhang, 2 credit hours

6. Advanced manufacturing and robotics, Zhen Wang, 2 credit hours

7. Development and future of mechanics and aerospace technology, 2 credit hours

8. Design-driven engineering innovation, Yi Xiong, 2 credit hours

9. Materials change the world, Jiangyu Li, 2 credit hours

10. Human and robot intelligence, Max Q.-H. Meng, 2 credit hours

11.China chip world dream, Hongyu Yu, 2 credit hours

12.Human machine interface and the future world, Xingyu Jiang, 2 credit hours

13.Trustworthy artificial intelligence autonomous driving, Qi Hao, 2 credit hours

14.The strategy of maritime power calls for elite talents, Xiping Yu, 2 credit hours

15-16.Term project demonstration, Bi Zhang, 2 credit hours

,18. 教材及其它参考资料 Textbook and Supplementary Readings

无指定教材。No fixed textbook.

课程评估 ASSESSMENT

19.

评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance		12%		
课堂表现 Class Performance		10%		
小测验 Quiz		28%		
课程项目 Projects				
平时作业 Assignments		30%		
期中考试 Mid-Term Test				
期末考试 Final Exam				
期末报告 Final Presentation		20%		
其它（可根据需要改写以上评估方式） Others (The above may be modified as necessary)				

20. 记分方式 GRADING SYSTEM

☐ A. 十三级等级制 **Letter Grading**
☐ B. 二级记分制（通过/不通过） **Pass/Fail Grading**

课程审批 REVIEW AND APPROVAL

21. 本课程设置已经过以下责任人/委员会审议通过
This Course has been approved by the following person or committee of authority

工学院教学工作委员会

SUSTech
Southern University
of Science and
Technology