# 工程力学创新班（本硕、本博连读）

# Engineering Mechanics (Innovation Class)

**专业代码：**080102　　**学制：**4 年

**Program Code:080102**　　**Duration：4 years**

## 培养目标：

本专业注重立德树人，培养热爱祖国，德智体美全面发展，适应现代社会、科技、经济进步，具有扎实和宽广的力学基础理论和专业知识、突出的创新实践能力，具有国际化视野和跨文化交流能力，能够从事高水平科技研究和工程实践的高层次复合型优秀人才。

## Educational Objectives:

This major lays emphasis on high moral value establishment and people training, aims to cultivate high-quality compound talents who love their motherland, develop all-roundly in morality, intelligence physiqueand aesthetics, adapt to the progresses of modern society, science and technology and economy, have solid and broad basic theories and professional knowledgein mechanics, possess outstanding innovative practice ability, international vision, cross-cultural communication skills, and the ability to engage in high level scientific research and engineering practice.

## 毕业要求：

№1.工程知识：具有从事工程力学领域工作所需的数学、机械、电工电子、材料和计算机等基础理论知识，掌握本领域内至少一个专业方向的专业知识和技能，并能将所学知识用于解决本领域内的复杂工程问题。

№2.问题分析：能够应用数学、自然科学和力学的基础原理，并通过文献研究分析和解决较复杂的交通工程、航天航空结构计算及设计问题以及更广泛工程领域问题，以获得有效结论。

№3.设计/开发解决方案：能够设计针对复杂工程问题需求的解决方案，设计满足特定需求的结构、部件或流程，并能够利用数理等相关基础理论和专业知识分析和计算设计的依据。

№4.研究：能够基于科学原理并采用科学方法对与力学相关的工程问题进行研究，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：能够针对与力学相关的工程问题，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：能够基于工程力学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。

№7.环境和可持续发展：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。

№8.职业规范：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。

№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。

## Student Outcomes:

№1.Engineering Knowledge: Acquire thebasic theoretical knowledge of mathematics, mechanics, electrics and electronics, materials and computers to be engaged in the field of mechanical engineering; master the professional knowledge and skills of at least one major in this field and be able to apply the knowledge to solve complex engineering problems.

№2.Problem Analysis: An ability to apply the basic principles of mathematics, natural science and mechanics, and through literature research to analyzeand solve complex problems of structural calculation and design in transportation engineering, aerospace engineering or even more extensive engineering fields, in order to obtain the effective conclusion.

№3.Design / Development Solutions: An ability to design solutions forcomplex engineering problems and to design structures, components or procedures that meet specific needs, further be able to verify the basis of design through analyses and calculations by using mathematical or other related theories and professional knowledge.

№4.Research: An ability to investigate complex mechanical engineering problems based on scientific theories and adopting scientific methods, including design of experiments, analysis and interpretation of data and arriving atvalid conclusions through synthesis of information.

№5.Applying Modern Tools: An ability to create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to solve complex mechanical engineering problems, with an understanding of the limitations.

№6.Engineering and Society: Be able to conduct reasonable analyses based on the knowledge of engineering mechanics, and to evaluate the influences of professional engineering practice and complex engineering solutions to social, health, safety, law and culture, and understand the responsibilities.

№7.Environment and Sustainable Development: An ability to understand and evaluate the impact of professional engineering solutions in environmental and societal contexts and demonstrate knowledge of and need for sustainable development.

№8.Professional Standards: An understanding of humanity science and social responsibility, being able to understand and abide by professional ethics and standards responsibly in engineering practice.

№9.Individual and Teams: An ability to function effectively as an individual, and as a member or leader in

diverse teams and in multi-disciplinary settings.

№10.Communication: An ability to communicate effectively on complex engineering problems with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, give and receive clear instructions, and communicate in cross-cultural contexts with international perspective.

№11.Project Management: Demonstrate knowledge and understanding of engineering management principles and methods of economic decision-making, to function in multidisciplinary environments.

№12.Lifelong Learning:With the recognition of the need for independent and life-long learning and with the abilities to learn continuously and adapt to new developments.

## 专业简介：

华南理工大学力学学科历史悠久，是在我国复合材料力学研究的先驱周履先生的带领下发展起来的。本学科于 1960 年开始招收工程力学专业本科生，1981 年获首批固体力学硕士学位授予权，2003 年获固体力学博士学位授予权，2006 年获力学一级学科硕士学位授予权，2012 年被评为广东省优势重点学科。本学科注重具有国家战略需求背景的基础和应用研究，致力于解决交通工程和航空航天领域的关键力学问题，现已成为紧密服务地方经济的有影响力的特色学科。在未来 3-5 年，本学科将力争进入国内知名力学学科行列。本学科师资力量雄厚，具有博士学位和海外经历的人数比例分别为 88%和 60%，基础力学教学团队为“广东省级教学团队”。工程力学专业于 2009 年创办力学创新班，采用本硕、本博一体化创新型人才培养模式，并实行本科生导师制度，指导学生参加各类科研项目。近年来，本专业又创立了华工-顶峰联合培养模式，并建立了与之相配套的课程体系与管理制度。目前，本专业已拥有“广东省力学实验教学示范中心”、“广东省航空航天先进材料与结构工程技术中心”等多个省级教学和科研实践支撑平台。力学创新班的学生在科研、竞赛、社会服务等方面均取得了优异的成绩。

## Program Profile：

The Department of Engineering Mechanics in South China University of Technology has a long history. It was first developed under the leadership of Professor Lv Zhou, who was a pioneer in the study of Mechanics of Composite Materials in China. The department began to recruit undergraduate students majoring in Engineering Mechanics in 1960. In 1981 and 2003, the department was awarded the granting rights for the master's degrees (first batch) and the doctoral degrees in solid mechanics, respectively. In 2006, the department further received the granting right for the first-class master's degree in mechanics. In 2012, the mechanical discipline of the department was selected as the “Key Disciplines” of Guangdong Province. The department always put emphasis on the fundamental and application researches with the backgrounds of Southern China regional or national strategy demands, and dedicated to solving key mechanical problems in the fields of Transportation and Aerospace. Currently, the department has become an influential characteristic discipline closely serving the local economics and it is seeking to enter the

ranks of famous mechanical discipline in China in recent 3-5 years.

Our department has a strong faculty strength with 3 double-hire academicians and 27 full-time teachers. The proportional numbers of teachers with doctoral degrees and overseas backgrounds are 88% and 60% respectively. The basic mechanics teaching team has been approved as a “Guangdong Provincial Teaching Team." In 2009, the innovation classes of Engineering Mechanics were founded, indicating the full implementation of the integrated training methods of bachelor-master or bachelor-doctoral degrees. On the basis of the course study, an undergraduate tutorial system was implemented to guide students to participate in research projects. Recently, the department has further promoted the SCUT-PIMS joint training program and established the corresponding curriculum optimization design and management system. Up to this point, a number of teaching and research support platforms have been established in our department, such as the "Experimental Mechanics Teaching Demonstration Center of Guangdong Province”, “the Research Center of advanced aerospace materials and structure engineering technology of Guangdong Province” etc. The students in mechanics innovation classes have made outstanding achievements in scientific research, competition and social service.

## 专业特色：

本硕博一体化培养，强化数学、力学基础，增强理论分析、数值计算和实验技能；重视工程实践，结合交通、航空等工程背景，进行强基础宽口径培养；实行导师制，学生参与学科前沿研究，加强国际化，培养高水平复合型人才。

## Program Features:

Adopt Bachelor-Master-Doctor integrated training mode, strengthen the basic knowledge on mathematics and mechanics,and also develop the abilities ofnumerical calculation and experimental operation. Pay attention to engineering practice,combined with the industry background ofTransportation and Aerospace, to carry on training with solid foundations andbroad caliber. Promote undergraduate tutorial system andguide students to participate innew frontier of scientific researches. Strengthen international communication and cultivate high-quality compound talents.

**授予学位：**工学学士学位

**Degree Conferred:** Bachelor of Engineering

## 主干课程：

理论力学、材料力学、结构力学、弹性力学、流体力学、计算力学及工程软件、数值分析、实验力学、塑性力学、振动力学。

## Core Courses:

Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Theory of Elasticity, Fluid Mechanics, Computational Mechanics and Engineering Softwares, Numerical Analysis, Experimental

Mechanics, Plasticity Theory, Mechanics of Vibration.

## 特色课程：

全英语教学课程：塑性力学、英语科技论文写作

双语教学课程：弹性力学、计算力学及工程软件、科技文献检索

研究型课程：各类课程设计、毕业论文

新生研讨课：力学仿真及工程应用、先进复合材料的应用与发展

专题研讨课：计算力学前沿论坛

MOOC：材料力学

本研贯通课：数学物理方程、现代测试技术课程设计、英语科技论文写作

竞教结合课程：力学基础知识综合强化训练

创新实践课程：力学仿真及工程应用、先进复合材料的应用与发展、计算力学前沿论坛、创新研究训练（包括顶峰暑期科研实习）、创新研究实践 I、创新研究实践 II

创业教育课程：创业实践

依托行业课程：

交通与土木类：工程制图、理论力学、材料力学、结构力学、弹性力学、流体力学、工程测量学、钢结构、土力学与地基基础、混凝土结构、工程结构 CAD、建筑工程施工、振动力学、结构优化设计、土木工程概论、桥梁工程、道路工程、建筑结构抗震防灾、高层建筑结构设计、地下结构设计等；

机械类：工程制图、电工学基础、理论力学、材料力学、流体力学、塑性力学、振动力学、机械设计基础、机械设计基础课程设计等；

航空航天类：工程制图、理论力学、材料力学、结构力学、弹性力学、流体力学、计算力学及工程软件、实验力学、振动力学、计算流体力学、数值分析、结构优化设计、塑性力学、板壳理论、航空航天概论及力学应用、飞机结构设计、飞机结构设计课程设计、力学仿真及工程应用、先进复合材料的应用与发展。

## Featured Courses:

Courses Taught in English:Plasticity Theory,Introduction on Scientific Writing

Bilingual Courses:Theory of Elasticity, Computational Mechanics and Engineering Softwares, Scientific and Technological Document Retrieval

Research Courses:All the course design work, Thesis

Freshmen Seminars:Simulation of Mechanics and its Application in Engineering, Development and Application of Advanced Composite Materials

Special Topics:Advanced Forum on Computational Mechanics

MOOCs：Mechanics of Materials

Baccalaureate-Master’s IntegratedCourses:Equations of Mathematical Physics, The Course Design of

Modern Measurement Technology, Introduction on Scientific Writing

Special Designs:

Contest-Teaching IntegratedCourses:General Intensive Training of The Fundamental Knowledge of Mechanics

Innovation Practice:Simulation of Mechanics and its Application in Engineering, Development and Application of Advanced Composite Materials, Advanced Forum on Computational Mechanics,Innovation Research Training, Innovation Research Practice 1, Innovation Research Practice 2

Entrepreneurship Courses:Entrepreneurial Practice

**RelatedIndustry Courses:**

**Transportation and Civil Engineering:**Engineering Drawing, Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Theory of Elasticity, Fluid Mechanics, Engineering Surveying, Steel Structures, Soil Mechanics and Geotechnical Engineering, Concrete Structure, Computer Aided Design of Engineering Structures, Building Construction , Mechanics of Vibration, Structural Optimization Design,An Introduction to Civil Engineering, Bridge Engineering, Roadway Engineering, Hazard Mitigation for Buildings, Structural Design for High-rise Buildings, Underground Structural Design, etc..

**Mechanical Engineering**: Engineering Drawing,Fundamentals of Electrical Engineering, Theoretical Mechanics, Mechanics of Materials, Fluid Mechanics, Plasticity Theory, Mechanics of Vibration, Fundamentals of Mechanical Design, The Course Design of Fundamentals of Mechanical Design, etc..

**Aerospace Engineering**: Engineering Drawing,Theoretical Mechanics, Mechanics of Materials, Structural Mechanics, Theory of Elasticity, Fluid Mechanics, Computational Mechanics and Engineering Softwares, Experimental Mechanics, Mechanics of Vibration, Computational Fluid Mechanics, Numerical Analysis, Structural Optimization Design, Plasticity Theory, Theory of Plates and Shells, Foundations of Aeronautics and Astronautics and Applications of Mechanics, Aircraft Structural Design, The Course Design of Aircraft Structural Design, Simulation of Mechanics and its Application in Engineering, The development and application of advanced composite materials.

## 一、教学计划总体安排表（General Teaching Schedule）

| 学年 | 学期 | 教学进度安排（周） | | | | | | | | | | | | | | | | | | | | 理论教学 | 考试 | 入学教育 | 军训 | 课程设计 | 大作业 | 工程训练 | 电子实习 | 综合实验 | 社会实践 | 生产实习 | 毕业实习 | 其它实习 | 中外合作项目 | 毕业设计 | 就业安排 | 机动 | 假期 | 小计 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | |
| 一 | 1 | | C | A | A | A | A | A | A | A | A | A | A | A | A | A | A | B | D | D | D | 14 | 1 | 1 | 3 | | | | | | | | | | | | | | | | 19 |
| | 2 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | M | B | B | J | 16 | 2 | | | | | | | | 1 | | | 1 | | | | | 20 |
| 二 | 3 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | B | B | 18 | 2 | | | | | | | | | | | | | | | | | 20 |
| | 4 | A | A | A | A | A | A | A | A | A | A | A | A | A | K | G | G | E | E | B | B | 13 | 2 | | | 2 | | 2 | | | | 1 | | | | | | | | 20 |
| 三 | 5 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | K | E | E | B | B | 15 | 2 | | | 2 | | | | | | 1 | | | | | | | | 20 |
| | 6 | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | I | E | E | B | B | 15 | 2 | | | 2 | | | | 1 | | | | | | | | | | 20 |
| 四 | 7 | 研究生阶段学习，并完成本科毕业实习和毕业设计（论文） | | | | | | | | | | | | | | | | | | | | 16 | 2 | | | | | | | | | | | | | | | | | 20 |
| | 8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 2 | | | 15 | 2 | | | 20 |
| 合计（周） | | | | | | | | | | | | | | | | | | | | | | 107 | 13 | 1 | 3 | 6 | / | 2 | / | 1 | 1 | 2 | 2 | 1 | / | 15 | 2 | 2 | | 159 |

## 二、各类课程学分登记表（Registration Form of Curriculum Credits）

### 1.学分统计表（Credits Registration Form）

| 课程类别<br>Course Category | 课程要求<br>Requirement | 学分<br>Credits | 学时<br>Academic Hours | 备注<br>Remarks |
|---|---|---|---|---|
| 公共基础课<br>General Basic Courses | 必修<br>Compulsory | 61.0 | 940 | |
| | 通识<br>General Education | 10.0 | 160 | |
| 学科基础课<br>Disciplinary Basic Courses | 必修<br>Compulsory | 34.5 | 560 | |
| | 选修<br>Elective | 10.5 | 168 | |
| 专业领域课<br>Specialty- related Courses | 必修<br>Compulsory | / | / | |
| | 选修<br>Elective | 16.0/26.0* | 256/416* | |
| 合计<br>Total | | 132.0/142.0* | 2084/2244* | |
| 集中实践教学环节（周）<br>Practice Training (Weeks) | | 29.0+6.0 | 35 周 | |
| 毕业学分要求<br>Credits Required for Graduation | 132.0+35.0=167.0<br>142.0+35.0=177.0* | | | |
| 研究生阶段（本硕） | 15.0（必修）+10.0（选修）=25.0（其中必修课不少于 15.0 学分） | | | |
| 研究生阶段（本博） | 23.0（必修）+12.0（选修）=35.0（其中必修课不少于 23.0 学分） | | | |

备注：1.带“*”部分是指用于未获得推免资格学生的附加教学计划；2.硕士、博士阶段课程修读要求及毕业资格按照学生修读的研究生专业培养方案执行，第四年在导师的指导下修读相关课程；学生本科阶段在取得专业教学计划规定学分的同时，还必须第二课堂取得 2 个人文素质教育学分和 4 个创新能力培养学分。

Remark: “*” for the students who pursue the Bachelor’s degree only.

**2.类别统计表（CategoryRegistration Form）**

| 学时 Academic Hours | | | | | 学分 Credits | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 总学时数 Total | 其中 Include | | 其中 Include | | 总学分数 Total | 其中 Include | | 其中 Include | | | 其中 Include |
| | 必修学时 Compulsory | 选修学时 Elective | 理论教学学时 Theory Course | 实验教学学时 Lab | | 必修学分 Compulsory | 选修学分 Elective | 集中实践教学环节学分 Practice-concentrated Training | 理论教学学分 Theory Course Credits | 实验教学学分 Lab | 创新创业教育学分 Innovation and Entrepreneurship Education |
| 2084/2244* | 1500 | 584/744* | 1766/1926 | 318 | 167/177* | 124.5 | 42.5/52.5* | 35 | 122/132* | 10 | 12 |

## 三、专业教学计划表（TeachingSchedule）

| 类别 Course Category | 课程代码 Course No. | 课程名称 Course Title | 是否必修 C/E | 学时数 Total Curriculum Hours | | | | 学分数 Credits | 开课学期 Semester | 毕业要求 Student Outcomes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 总学时 Class Hours | 上机 Computer-aided Class Hours | 实验 Lab Hours | 实践 Practice Hours | | | |
| 公共基础课 General Basic Courses | 143093 | 思想道德修养与法律基础<br>Cultivation of Thought and Morals & Fundamental of Law | 必修课 C | (40)<br>(36) | | | | 2.5 | 3 | №8 |
| | 143091 | 中国近现代史纲要<br>Skeleton of Chinese Modern History | | (32)<br>24 | | | | 2.0 | 4 | №8 |
| | 143106 | 毛泽东思想和中国特色社会主义理论体系概论<br>Thought of Mao ZeDong and Theory of Socialism with Chinese Characteristics | | (80)<br>48 | | | | 5.0 | 5 | №8 |
| | 143090 | 马克思主义基本原理<br>Fundamentals of Marxism Principle | | (40)<br>36 | | | | 2.5 | 6 | №8 |
| | 143094 | 形势与政策<br>Analysis of the Situation & Policy | | (128) | | | | 2.0 | 1-8 | №8 |
| | 144001 | 大学英语（一）<br>College English(1) | | 64 | | | | 4.0 | 1 | №10 |
| | 144002 | 大学英语（二）<br>College English(2) | | 64 | | | | 4.0 | 2 | №10 |
| | 145268 | C++程序设计基础<br>C++ Program Designing Basics | | 48 | | | | 3.0 | 1 | №5 |
| | 152001 | 体育（一）<br>Physical Education (1) | | 32 | | | 32 | 1.0 | 1 | №12 |
| | 152002 | 体育（二）<br>Physical Education (2) | | 32 | | | 32 | 1.0 | 2 | №12 |
| | 152003 | 体育（三）<br>Physical Education (3) | | 32 | | | 32 | 1.0 | 3 | №12 |
| | 152004 | 体育（四）<br>Physical Education (4) | | 32 | | | 32 | 1.0 | 4 | №12 |
| | 106001 | 军事理论<br>Military Principle | | (16) | | | | 1.0 | 2 | №6 |
| | 145271 | 面向对象程序设计<br>Object-Oriented Programming | | 32 | | | | 2.0 | 2 | №5 |
| | 140191 | 微积分Ⅱ（一）<br>Calculus(1) | | 80 | | | | 5.0 | 1 | №1,2 |
| | 140192 | 微积分Ⅱ（二）<br>Calculus(2) | | 80 | | | | 5.0 | 2 | №1,2 |
| | 130009 | 工程制图<br>Engineering Drawing | | 48 | | | | 3.0 | 1 | №1,3 |
| | 141005 | 大学物理Ⅲ（一）<br>General Physics (1) | | 64 | | | | 4.0 | 2 | №1,2,4 |
| | 141006 | 大学物理Ⅲ（二）<br>General Physics (2) | | 64 | | | | 4.0 | 3 | №1,2,4 |
| | 141007 | 大学物理实验（一）<br>Physics Experiment(1) | | 32 | | 32 | | 1.0 | 2 | №1,2,4 |
| | 141008 | 大学物理实验（二）<br>Physics Experiment(2) | | 32 | | 32 | | 1.0 | 3 | №1,2,4 |
| | 140197 | 线性代数与解析几何<br>Linear Algebra & Analytic Geometry | | 48 | | | | 3.0 | 1 | №1,2 |
| | 140019 | 概率论与数理统计<br>Probability & Mathematical Statistics | | 48 | | | | 3.0 | 2 | №1,2 |
| | | 人文科学领域<br>Humanities | 通识课 E | 96 | | | | 6.0 | | №8 |
| | | 社会科学领域<br>Social Science | | 64 | | | | 4.0 | | №8 |
| | **合计<br>Total** | | | 1100 | | 64 | 128 | 71.0 | | |

## 三、专业教学计划表（续）（TeachingSchedule）

| 类别 Course Category | 课程代码 Course No. | 课程名称 Course Title | 是否必修 C/E | 学时数 Total Curriculum Hours | | | | 学分数 Credits | 开课学期 Semester | 毕业要求 Student Outcomes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 总学时 Class Hours | 上机 Computer-aided Class Hours | 实验 Lab Hours | 实践 Practice | | | |
| 学科基础课 Disciplinary Basic Courses | 133330 | 力学仿真及工程应用<br>Simulation of Mechanics and its Application in Engineering | 必 C | 16 | | | 4 | 1.0 | 1 | №1,2,5 |
| | 133102 | 力学概论<br>Introduction to mechanics | 必 C | 16 | | | | 1.0 | 1 | №1,2,6 |
| | 133329 | 先进复合材料的应用与发展<br>Development and Application of Advanced Composite Materials | 必 C | 16 | | | | 1.0 | 2 | №1, 2 |
| | 133101 | 理论力学 II<br>Theoretical Mechanics | 必 C | 80 | | 2 | | 5.0 | 2 | №1, 2 |
| | 133080 | 材料力学 III<br>Mechanics of Materials | 必 C | 80 | | 6 | | 5.0 | 3 | №1, 2 |
| | 133112 | 结构力学<br>Structural Mechanics | 必 C | 80 | | | | 5.0 | 4 | №1 |
| | 133083 | 弹性力学(双语)<br>Theory of Elasticity | 必 C | 64 | | 8 | | 4.0 | 4 | №1,2,4,5 |
| | 133104 | 实验力学<br>Experimental Mechanics | 必 C | 48 | | 24 | | 2.5 | 4 | №1,2,5 |
| | 133103 | 流体力学<br>Fluid Mechanics | 必 C | 64 | | | | 4.0 | 5 | №1-4 |
| | 133095 | 计算力学及工程软件<br>Computational Mechanics and Engineering softwares | 必 C | 48 | | 6 | | 3.0 | 5 | №1,2,4-6 |
| | 133469 | 振动力学<br>Mechanics of Vibration | 必 C | 48 | | 4 | | 3.0 | 6 | №1-2 |
| | 133105 | 数值分析<br>Numerical Analysis | 选 E | 48 | 16 | | | 2.5 | 3 | №1-5 |
| | 140045 | 数学物理方程<br>Equationsof Mathematical Physics | 选 E | 32 | | | | 2.0 | 3 | №1,2,4 |
| | 133360 | 塑性力学<br>Plasticity Theory | 选 E | 48 | | | | 3.0 | 5 | №1,2,4,5,10 |
| | 133079 | 板壳理论<br>Theory of Plates and Shells | 选 E | 32 | | | | 2.0 | 5 | №1,2,4 |
| | 135082 | 电工学基础<br>Fundamentals of Electrical Engineering | 选 E | 40 | | 8 | | 2.5 | 4 | №1-2 |
| | 131058 | 机械设计基础<br>Fundamentals of Mechanical Design | 选 E | 48 | | | | 3.0 | 5 | №1-2 |
| | 合 计 Total | | 必 C | 560 | | 50 | 4 | 34.5 | | |
| | | | 选 E | 选修课修读最低要求 10.5 学分 minimum elective course credits required:10.5 | | | | | | |
| 专业领域课 Specialty- related Courses | 133217 | 科技文献检索<br>Scientific and Technological Document Retrieval | 选 E | 8 | 4 | | | 0.5 | 3 | №4-5 |
| | 133057 | 工程测量学<br>Engineering Surveying | 选 E | 48 | | 8 | | 3.0 | 4 | №1,5,8,9 |
| | 133455 | 英语科技论文写作<br>Introduction on Scientific Writing | 选 E | 16 | | | | 1.0 | 5 | №4,8-10 |
| | 135009 | 电子技术<br>Electronic Engineering | 选 E | 56 | | 8 | | 3.5 | 5 | №1-2 |
| | 133098 | 结构优化设计<br>Structural Optimization Design | 选 E | 32 | 8 | | | 2.0 | 6 | №1-3,5 |
| | 133495 | 计算力学前沿论坛<br>Advanced Forum on Computational Mechanics | 选 E | 16 | | | | 1.0 | 6 | №1-5 |

| 类别 Course Category | 课程代码 Course No. | 课程名称 Course Title | 是否必修 C/E | 学时数 Total Curriculum Hours | | | | 学分数 Credits | 开课学期 Semester | 毕业要求 Student Outcomes |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 总学时 Class Hours | 上机 Computer-aided Class Hours | 实验 Lab Hours | 实践 Practice | | | |
| | 133454 | 航空航天概论及力学应用<br>Foundations of Aeronautics and Astronautics and Applications of Mechanics | 选E | 32 | | | | 2.0 | 3 | №1,2,10 |
| | 133456 | 飞机结构设计<br>Aircraft Structural Design | 选E | 48 | | | | 3.0 | 5 | №1-4 |
| | 133496 | 计算流体力学<br>Computational FluidMechanics | 选E | 32 | 8 | | | 2.0 | 6 | №1,2,4,5 |
| | 132189 | 土木工程概论<br>An Introduction to Civil Engineering | 选E | 18 | | | | 1.0 | 5 | №1,2,6 |
| | 133370 | 道路工程<br>Roadway Engineering | 选E | 48 | | | | 3.0 | 5 | №1-2 |
| | 133115 | 桥梁工程<br>Bridge Engineering | 选E | 64 | | | | 4.0 | 6 | №1-2 |
| | 133106 | 土力学与地基基础<br>Soil Mechanics and Geotechnical Engineering | 选E | 56 | | 8 | | 3.5 | 6 | №1-3,5 |
| | 132207 | 工程结构 CAD<br>Computer Aided Design of Engineering Structures | 选E | 64 | | | | 4.0 | 6 | №1-5 |
| | 133085 | 钢结构<br>Steel Structures | 选E | 48 | | | | 3.0 | 5 | №1-5 |
| | 133086 | 钢筋混凝土结构<br>Concrete Structure | 选E | 56 | | 4 | | 3.5 | 6 | №2-5 |
| | 133458 | 建筑工程施工<br>Building Construction | 选E | 32 | | | | 2.0 | 6 | №1-5,11 |
| | 132080 | 建筑结构抗震与防灾<br>Hazard Mitigation for Buildings | 选E | 32 | | | | 2.0 | 7 | №1-4 |
| | 133383 | 高层建筑结构设计（一）<br>Structural Design for High-rise Buildings (1) | 选E | 16 | | | | 1.0 | 7 | №1-4 |
| | 132098 | 地下建筑结构<br>Underground Structure Design | 选E | 24 | | | | 1.5 | 7 | №1-4 |
| | 133035 | 船舶结构力学<br>Structural Mechanics of Ships | 选E | 64 | | | | 4.0 | 7 | №1-2 |
| | 120003 | 创新研究训练<br>Innovation Research Training | 选E | 32 | | | | 2.0 | | №1-12 |
| | 120004 | 创新研究实践 I<br>Innovation Research Practice 1 | 选E | 32 | | | | 2.0 | | №1-12 |
| | 120005 | 创新研究实践 II<br>Innovation Research Practice 2 | 选E | 32 | | | | 2.0 | | №1-12 |
| | 120006 | 创业实践<br>Entrepreneurial Practice | 选E | 32 | | | | 2.0 | | №1-12 |
| | | | 选E | 选修课修读最低要求 16/26*学分<br>minimum elective course credits required: | | | | | | |

备注：1.学生根据自己开展科研训练项目、学科竞赛、发表论文、获得专利和自主创业等情况申请折算为一定的专业选修课学分（创新研究训练、创新研究实践 I、创新研究实践 II、创业实践等创新创业课程）。每个学生累计申请为专业选修课总学分不超过 4 个学分。经学校批准认定为选修课学分的项目、竞赛等不再获得对应第二课堂的创新学分。2.带“*”部分是对未获得推免研究生资格学生的专业领域选修课的学分要求。

Remark: “*” for the students who pursue the Bachelor’s degree only.

## 四、集中实践教学环节(Practice-concentrated Training)

| 课程代码 Course No | 课 程 名 称 Course Title | 是否必修 C/E | 学 时 数 Total Curriculum Hours | | 学分数 Credits | 开课学期 Semester | 毕业要求 Student Outcomes |
|---|---|---|---|---|---|---|---|
| | | | 实践 Practice weeks | 授课 Lecture Hours | | | |
| 106002 | 军训<br>Military Training | 必<br>C | 3 周 | | 3.0 | 1 | №9 |
| 143197 | 马克思主义理论与实践<br>Marxism Theory and Practice | 必<br>C | 2 周 | | 2.0 | 假期 | №8 |
| 130356 | 工程训练 I<br>Engineering Training | 必<br>C | 2 周 | | 2.0 | 4 | №1-3 |
| 133220 | 生产实习<br>Internship | 必<br>C | 2 周 | | 2.0 | 4/5 | №1,3,4-6,8-11 |
| 133339 | 力学基础知识综合强化训练<br>General Intensive Training of The Fundamental Knowledge of Mechanics | 必<br>C | 1 周 | 16 | 1.0 | 4 | №1-4 |
| 133459 | 结构力学课程设计<br>The Course Design ofStructural Mechanics | 必<br>C | 1 周 | | 1.0 | 4 | №1-4 |
| 133300 | 计算力学及工程软件课程设计<br>The Course Design of Computational Mechanics and Engineering Softwares | 必<br>C | 1 周 | | 1.0 | 5 | №1,2,4,5 |
| 133257 | 毕业实习<br>Graduation Fieldwork | 必<br>C | 2 周 | | 2.0 | 8 | №1-10,12 |
| 133274 | 毕业设计（论文）<br>Diploma Project (Thesis) | 必<br>C | 15 周 | | 15.0 | 8 | №1-12 |
| 133331 | 课外必读书籍<br>After School Reading Books | 选<br>E | 1 周 | | 1.0 | 2 | №1,8,12 |
| 133233 | 测量实习<br>Engineering Measuring Practice | 选<br>E | 1 周 | | 1.0 | 4 | №1-4 |
| 130195 | 机械设计基础课程设计<br>The Course Design of Fundamentals of Mechanical Design | 选<br>E | 2 周 | | 2.0 | 4 | №1-4 |
| 133426 | 塑性力学课程设计<br>The Course Design of Plasticity Theory | 选<br>E | 1 周 | 4 | 1.0 | 5 | №1,2,4,5 |
| 133109 | 现代测试技术课程设计<br>The Course Design of Modern Measurement Technology | 选<br>E | 1 周 | | 1.0 | 5 | №1-4 |
| 133457 | 飞机结构设计课程设计<br>The Course Design of Aircraft Structural Design | 选<br>E | 1 周 | | 1.0 | 5 | №1-5 |
| 133427 | 工程结构 CAD 课程设计<br>The Course Design of Computer Aided Design of Engineering Structures | 选<br>E | 1 周 | | 1.0 | 6 | №1-5 |
| 133245 | 桥梁工程课程设计<br>The Course Design of Bridge Engineering | 选<br>E | 1 周 | | 1.0 | 6 | №1-4 |
| **合 计<br>Total** | | 必<br>C | 29 周 | 16 | 29.0 | | |
| | | 选<br>E | 选修课修读最低要求 6.0 学分<br>minimum elective course credits required: | | | | |

备注：选课建议，建议对各类选修课程，参考依托行业课程分类，分方向选择相应课程。

## 五、第二课堂

第二课堂由人文素质教育和创新能力培养两部分组成。

**1.人文素质教育基本要求**

学生在取得专业教学计划规定学分的同时，还应结合自己的兴趣适当参加课外人文素质教育活动，参加活动的学分累计不少于 2 个学分。

**2.创新能力培养基本要求**

学生在取得本专业教学计划规定学分的同时，还必须参加国家创新创业训练计划或广东省创新创业训练计划或 SRP（学生研究计划）或百步梯攀登计划或一定时间的各类课外创新能力培养活动（如学科竞赛、学术讲座等），参加活动的学分累计不少于 4 个学分。

## 5.“Second Classroom” Activities

“Second Classroom” Activities are comprised of two parts, Humanities Quality Education and Innovative Ability Cultivation.

1) Basic Requirements of Humanities Quality Education

Besides gaining course credits listed in one’s subject teaching curriculum, a studentis required to participate in extracurricular activities of Humanities Quality Education based on one’s interest, acquiring no less than two credits.

2) Basic Requirements of Innovative Ability Cultivation

Besides gaining course credits listed in one’s subject teaching curriculum, a student is required to participate in any one of the following activities: National Undergraduate Training Programs for Innovation and Entrepreneurship, Guangdong Undergraduate Training Programs for Innovation and Entrepreneurship, Student Research Program (SRP), One-hundred-steps Innovative Program, or any other extracurricular activities of Innovative Ability Cultivation that last a certain period of time (e.g. subject contests,academic lectures), acquiring no less than four credits.