

# 车辆与运载学院

## 机械工程、动力工程及工程热物理（车辆与运载英文硕士项目）

（适用于2023级国际研究生）

### 一、 适用学科、专业

机械工程（一级学科，工学门类，学科代码 0802），车辆工程（二级学科，学科代码：080204）

动力工程及工程热物理（一级学科，工学门类，学科代码 0807），动力机械及工程（二级学科，学科代码：080703）

### 二、 培养目标与定位

使培养出的硕士研究生具有该学科坚实的基础理论及深入的专业知识，具有较强实践能力和创新意识、视野宽阔、符合国际化需求的高素质汽车工程技术和管理人员。

### 三、 培养方式

全脱产培养。

### 四、 学习年限

符合《清华大学研究生学籍管理规定》要求。

### 五、 培养环节与学位要求

攻读硕士学位研究生期间，学位要求总学分不少于 28 学分（考试学分不少于 18），其中公共必修课程 5 学分，必修环节 2 学分，学术与职业素养课程 1 学分，学科专业课程不少于 20 学分。研究生应修论文写作相关的指导课程，或由导师对研究生进行专门的论文写作训练。自学课程学分另计。

### 六、 课程设置

#### 1、 学位课( 不少于 28 学分 )

##### (1) 公共必修课( 不少于 2 门 5 学分 )

汉语课组任选一门	00000003	2 学分	考试	春秋
中国概况课	00000007	2-3 学分	考试	春秋

不足学分须用专业课学分替代

##### (2) 基础理论课( 不少于 3 学分 )

数学类公共课程

##### (3) 专业基础课( 不少于 3 学分 )

车辆控制工程(V)	70150113	3 学分	考试	秋
汽车机电系统(P)	70150163	3 学分	考试	春

#### (4) 专业课( 不少于 14 学分 )

轻量化设计基础(V)	70150133	3 学分	考试	秋
汽车工程 1(V)	70150153	3 学分	考试	秋
内燃机(P)	80150563	3 学分	考试	春
汽车工程 II (V)	70150333	3 学分	考试	春
电化学方法：测量与模拟(P)	70150362	2 学分	考查	秋
机械设计中的材料选择(V)	80150122	2 学分	考试	春
车辆新型驱动系统(P)	80150162	2 学分	考试	秋
氢能源材料与电催化基础(P)	80150592	2 学分	考试	秋
汽车碰撞安全基础(V)	80150193	3 学分	考试	秋

申请机械工程硕士学位的学生，选修课组“V”的学分数应不少于 8 学分；申请动力工程及工程热物理硕士学位的学生，选修课组“P”的学分数应不少于 8 学分。

导师指导选定的清华大学其它院系相关专业课程（≤ 5 学分，学位课）

#### (5) 学术与职业素养课程（不少于 1 学分）

学术与职业素养课（任选 1 门） 00000005 1 学分 考试 春秋

#### (6) 必修环节( 不少于 2 门 2 学分 )

文献综述与选题报告 69990021 1 学分 考查 春秋

学术活动 69990031 1 学分 考查

要求至少参加 10 次学术活动，填写学术活动记录，每次写 500 字以上的小结，由导师确认并签字，在毕业的前一学期交到系研究生办录入成绩及学分。

入学后第三学期结束前仍未通过选题报告者，则认为该必修环节考核未达到培养方案规定要求，应予以分流。硕士生可申请退学，否则学校予以退学处理。

## 2、非学位课

与研究课题有关的专门知识，可由导师指定内容系统地自学，列入个人培养计划，所获得的学分不计入申请学位所需学分。

## 七、学位论文工作及要求

撰写毕业论文语言为英语。学位论文内容应符合其所在学科专业方向要求。

其他按研究生院有关规定执行。

## 八、申请学位创新成果要求

研究生申请硕士学位，其学位论文相关创新成果应满足相关学科适用于 2022 级研究生的创新成果要求。

# Cultivation Plan for the Master in Vehicle and Mobility (English)

## 1. Applicable Discipline

“Mechanical Engineering” and “Power Engineering and Engineering Thermal physics”

## 2. Time to degree

2-3 years (1 year coursework, 1-2 year thesis). CGS covers three year since the class of 2022.

## 3. Requirement of Credits

Students should earn at least 28 degree credits from the following courses with a minimum of 18 credits received through written exam. In that 28 credits, commonly required courses are 5 credits and program requirements is no less than 23 credits which includes no less than 3 credits of basic theoretical course, 1 credit of academic and professional development courses, 2 credits of required step, 3 credits of fundamental major course, and 14 credits of major elective course. Besides, graduate students should register an academic writing related course, or receives formal academic writing training from their supervisor in case they fail to register such a course.

Graduate students are also required to listen to the Lab Safety lecture which is offered during the international student orientation education.

## 4. Curriculum

### (1) Commonly Required Courses (5 credits)

- Elementary Chinese 60610162 2 credits Written Exam
- One of Understanding China courses 2-3 credits Written Exam

### (2) Program Requirements (No less than 23 credits)

#### 1) Required Step (2 credits)

- Research Proposal & Thesis Plan 69990021 1 Credit Test
- Academic Discussion 69990031 1 Credit Test
- Mid-term inspection of thesis work

Students are demanded to take part in Academic Activities at least 10 times and keep a record of at least 500 words. Before the final presentation of degree thesis, students should hand in the report. After the supervisor checking the report students can get the credit.

Students are required to participate and pass “research proposal & thesis plan” by the end of their third semester. In case they fail to meet this requirement, they will be considered to have failed in this required step and will be asked to withdraw from the University. Mid-term inspection of thesis work is conducted in the middle between research proposal & thesis plan and oral defense.

**2) Basic Theoretical Course (No less than 3 credits)**

- One Mathematics Course written Exam

**3) Fundamental Major Courses (No less than 3 credits)**

Course Name	Code	Credit	Exam Form	Season	V\P
Mechatronic Systems in Automotive Engineering	(70150163)	3	Written Exam	spring	P
Vehicle Control Engineering	(70150113)	3	Written Exam	autumn	V

**4) Major Elective Courses (No less than 14 credits)**

Course Name	Code	Credit	Exam Form	Season	V\P
Automotive Engineering I	(70150153)	3	Written Exam	autumn	V
Automotive Engineering II	(70150333)	3	Written Exam	spring	V
Internal Combustion Engines	80150563	3	Written Exam	Spring	P
Electrocatalysis and Materials for Hydrogen Energy	80150592	2	Written Exam	autumn	P
Alternative Vehicle Propulsion System	(80150162)	2	Written Exam	autumn	P
Fundamentals of Lightweight Design	(70150133)	3	Written Exam	autumn	V
Materials Selection in Mechanical Design	(80150122)	2	Written Exam	spring	V
Fundamentals of Automotive Crash Safety	(80150193)	3	Written Exam	autumn	V
Mechatronic Systems in Automotive Engineering	(70150163)	3	Written Exam	spring	P

Vehicle Control Engineering	(70150113)	3	Written Exam	autumn	V
Electrochemical Methods: Measurement and Simulation	(70150362)	2	Inspection	autumn	P

Students can also select some courses of other departments under the guidance of their supervisor ( $\leq 5$  credits).

Students who will apply for master degree in “Mechanical Engineering” shall earn at least 8 credits from V group courses; students who will apply for master degree in “Power Engineering and Engineering Thermal physics” shall earn at least 8 credits from P group courses.

4) **One of the academic and professional development courses** 00000005 1 credit Test/written exam

(1) Global Environmental Issues 80050253 Test Spring

(2) **Reading and Writing of Technical Papers in English** 80140012

Test Spring

(3) **How to report research results in English and the related issues**

60250101 Test Spring

(4) World River Basin Governance 80040272 written exam Spring

(5) Environmental Management and Policy 80050213 Written exam Fall

(6) Chemical Engineering Ethics 60340011 Test Spring

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3) **Other Courses of Your Own Interests**

Students can also select some other courses related to their research topic. But these courses are non-degree courses and should not be counted when applying to the degree.

## 5. Thesis Requirement

- Master students are required to invest at least one year in thesis work. The international students shall write degree thesis in English, and the research topic shall meet the requirement of their discipline.
- Master students should make a presentation based on a 5000 words research proposal around the end of second term/October of the third term.
- A midterm review will be organized to check the progress of the research work at the end of the third/fourth term. The master students who pass

the review will continue with their research work.

- Thesis defense is due upon satisfaction of all training requirements.

## **6. Innovation Requirement**

To apply for Master degree of Tsinghua University, students' master thesis needs to meet the innovation requirement which is stated in the document

“Innovation requirement for Master students applying for Tsinghua' s Master degree in mechanical engineering/Power Engineering and Engineering Thermal physics.

