

# **Doctoral Program in Mechanics**

## **1. Introduction**

Mechanics and Ballistics, founded in 1960, is a national key major. It offers several bachelor, master and doctoral programs, as well as a post-doctoral program. The mechanics discipline, based on mechanics theory and its applications, focuses on the fundamental theory, numerical simulations and test techniques for systems of civil use and military use. As a project technical chief or technology topics chief, our school presided over and completed a lot of key projects, including 6 items of the State 973 Projects, 5 items of the 863 Projects, 4 items of the National Security Specials, more than 100 items of the National Natural Science Foundations, national & ministerial key projects, and 3 items of international cooperation projects, with a total research funding of more than RMB300 million. Among them, 2 items won the National Technology Invention Second Prizes (ranking 1st) and 2 items won the National Science & Technology Progress Second Prizes (ranking 3rd).

Our school has more than 70 invention patents authorized, and over 10 monographs and 500 SCI and EI papers published. Among the faculty members are more than 20 high-level talents, including academicians, the State 973 Technical Chiefs, New Century Excellent Talents, etc. The school has the Transient Physics State Key Laboratory, and the Mechanical Experiment Demonstration Center of Jiangsu Province, the total value of the experimental equipment exceeding one hundred million. The laboratories cover an area of more than 20,000 square meters, and have a collection of more than 20 million books.

## **2. Research Directions**

- (1) Launch dynamics
- (2) Theory of multibody system dynamics & its applications
- (3) Theory of elastic-plastic mechanics & its applications
- (4) Fluid control & high-speed air dynamics
- (5) Detonation propulsion & noise control
- (6) Explosion mechanics & security, ballistics
- (7) Ballistics, flight dynamics & control

## **3. Duration of studies**

Full time PhD students are expected to complete their studies and earn their degrees in 4 to 8 years, and they will be disqualified from the program after 8 years.

## **4. Credits requirements**

Students are required to complete at least 18 degree credits from courses in Section 5 with a minimum of 16 coursework credits and 2 obligatory courses.

## **5. Curriculum**

Course No.	Course Name	Semester	Credits
<b><i>I. Fundamental Courses</i></b>			<b>4</b>
L371A002	Chinese	Fall	2
L371A003	Introduction to Chinese Classics	Fall	2
<b><i>II. Core Courses</i></b>			<b>8+</b>
L108B005	Sensitivity Analysis & Optimization	Spring	2
L113A018	Multibody System Dynamics	Spring	3
S108C010	Transfer Matrix Method for Multibody Systems	Fall	3
B108C003	Structural Dynamics & Aerodynamic Elasticity	Fall	3
<b><i>III. Major Electives</i></b>			<b>3</b>
L108C010	Advanced Launch Dynamics	Fall	3
<b><i>IV. Thesis Credits</i></b>			
L0000003	Dissertation Proposal II	Fall	<b>2</b>
L0000004	Academic Activities II	Spring	
<b>Total Credits Required</b>			<b>18+</b>
NOTE: Graduate students are usually expected to meet the course requirements in the first academic year, including: I. Fundamental Courses, II. Core Courses, and sufficient elective courses in III. Major Electives.			

## 6. PhD Dissertation Topic and Research Proposal

PhD dissertation proposal should be no less than 10000 words long and has at least 80 references, half of which must be published in the recent 5 years. A PhD student should choose a research topic for the PhD dissertation and spend no less than 2 years on the dissertation research and writing, all under an advisor's guidance.

Detailed regulations and requirements on PhD dissertation are documented in the "*NJUST Regulations about the Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations*". The PhD dissertation research proposal writing and defense should be completed in no later than the second academic year of the program.

## 7. Publication

To meet the degree requirements, a PhD student is required to have a certain number of academic publications related to the dissertation research. Detailed requirements are documented in "*NUST regulations on a postgraduate's publications of their research work*".

## 8. PhD Dissertation Requirements

Detailed regulations and requirements on PhD dissertation are documented in the "*NJUST Regulations about the Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations*", and "*NUST Style Sheet for Theses and Dissertations*". For a joint effort with others, or a follow-up of previous work, the student should clearly specify his/her contribution to the thesis.