

Reform of Compound Talent Cultivation Model for Aircraft Manufacturing Engineering Under the Guidance of Low-altitude Economy

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Abstract: This work targets the pressing shortage of high-caliber professionals in the low-altitude economy industry, with the Aircraft Manufacturing Engineering program at Tiangong University selected as the practical case. It sorts out three core pain points that have long restricted talent output, including the outdated training system failing to keep pace with rapid industrial iteration, obvious shortcomings in core course construction, and insufficient practical innovation ability among enrolled students, then puts forward targeted reforms for the whole talent cultivation framework from three clear dimensions, the first one is to jointly develop dynamic training schemes matching low-altitude industry application scenarios with cooperative enterprises, and complete the restructuring of interdisciplinary integrated courses on this basis, the second one is to build a four-dimensional closed-loop innovation mechanism that covers teaching links, management rules, campus culture and scientific research practice, the third one is to push forward the construction of an in-depth collaborative education ecosystem connecting universities and industrial parties. The practice of this round of reform has achieved quite remarkable results. All the first batch of graduates have obtained high-quality employment offers or been admitted to further study programs. The program has successfully obtained the approval of several doctoral and master's degree authorization points and has been recognized as a Key Construction Major for Emerging Engineering Education in Tianjin's Universities. The research paper can provide a reference for further reform of this major and cultivate more low-altitude economic talents.

Keywords: Low-altitude economy; Aircraft manufacturing engineering; Compound talent cultivation model

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1. Introduction

The low-altitude economy has developed rapidly in recent years ^[1]. According to the relevant information in reference 2, the market size of China's low-altitude economy has climbed from 500 billion yuan to 1.5 trillion yuan by 2025, and will further increase in the future ^[2]. The Chinese government also attaches great importance to the development of the low-altitude economy and has included it in the government work report for three consecutive years ^[3]. All 31 provincial-level local governments in China have included the low-altitude economy in their local government work reports, which proves the great potential of the low-altitude economy ^[4].

The low-altitude economy is different from traditional industries and is a new form of economy ^[5]. However, the low-altitude economy has also encountered some problems such as inadequate standards and supervision. Especially, there is a severe shortage of high-end professional talents required for the low altitude economy, and universities must accelerate the

cultivation of high-quality innovative talents.

This paper takes the Aircraft Manufacturing Engineering major at Tiangong University as an example, aiming to cultivate high-quality innovative talents that are more in line with the low altitude economy industry through the reform of talent cultivation paradigms.

2. Current issues

Tiangong University has enrolled students in the Mechanical and Electronic Engineering (Aerospace Experimental Class) for three consecutive years from 2019 to 2021. The enrollment results of these three sessions have been good, and all students have graduated. In 2022, the Aircraft Manufacturing Engineering program will officially begin enrolling students. Firstly, enroll 30 students in one class, and gradually expand in the future. By 2026, the aircraft manufacturing engineering program will have expanded to six classes with 180 students. At the beginning, this major aimed to cultivate talents in the aviation industry, such as airplanes, but it clearly lagged behind the development of the low-altitude economy industry. Therefore, this paper is based on the previous foundation, integrating knowledge related to the low-altitude economy, reshaping the professional training program, and ultimately achieving the goal of cultivating high-quality innovative low-altitude economy talents.

3. Key measures

3.1. Construction of a talent cultivation system

This major first forms a talent development team. The team members include technical experts from enterprises in the field of low-altitude economy and senior teachers from universities. Then, the talent development team conducted in-depth research and formulated the following talent training plan with economic characteristics (see Figure 1).

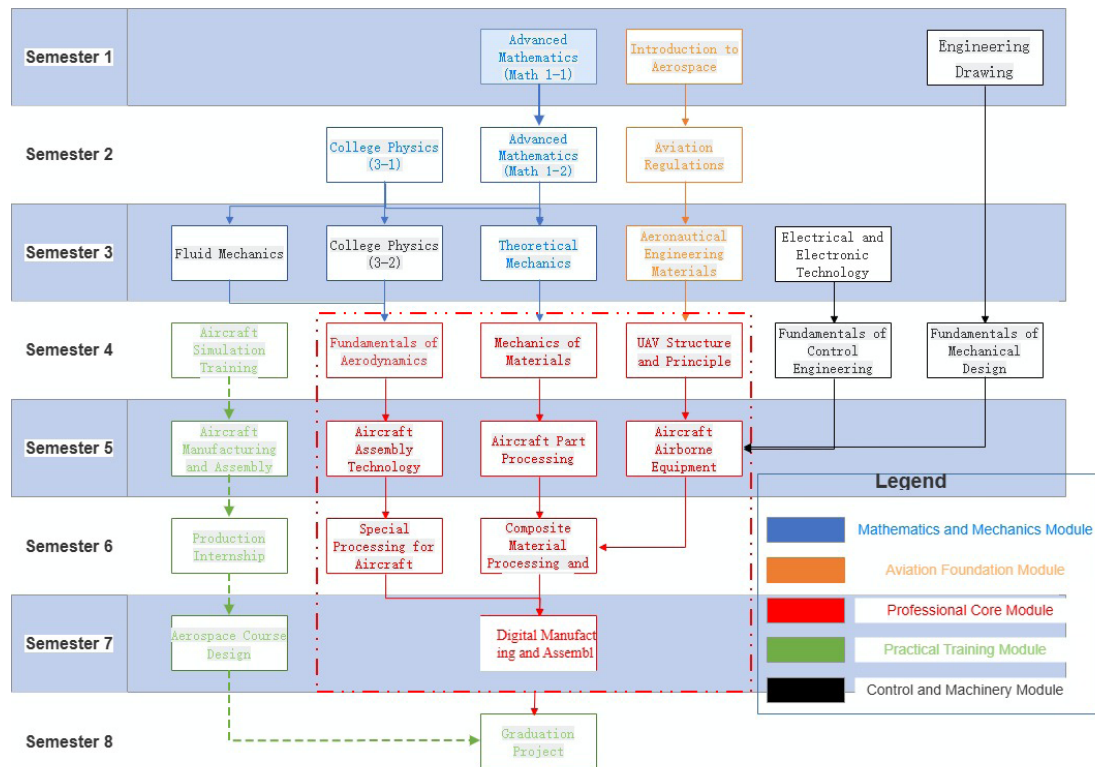


Figure 1. Main course structure diagram.

On the basis of the existing curriculum system, the program optimizes course content by adding core modules closely related to the low-altitude economy, including Aviation Regulations, UAV Structure and Principles, Fundamentals of Aerodynamics, Aircraft Simulation Training, and Aircraft Manufacturing and Assembly. Meanwhile, multiple specialized elective courses are supplemented, covering Advanced Research on Unmanned Helicopters, Green Aviation Technology, Aeronautical Meteorology and Aerial Surveying, and Aircraft System Design.

3.2. Four-dimensional innovation driving

Through joint policy research conducted by the college, disciplinary management departments and the University-Enterprise Cooperation Office, targeted incentive and supervision policies have been formulated. A closed-loop innovation governance model featuring “teaching innovation–management innovation–cultural innovation–scientific research innovation” is constructed from four synergistic dimensions, so as to realize coordinated growth between talent cultivation quality and industrial development of the low-altitude economy (see **Figure 2**).

The center of the four dimensions of innovation revolves around students, with a focus on researching low-altitude economic policies, utilizing cross-disciplinary integration, and aiming to meet the demands of the low-altitude industry.

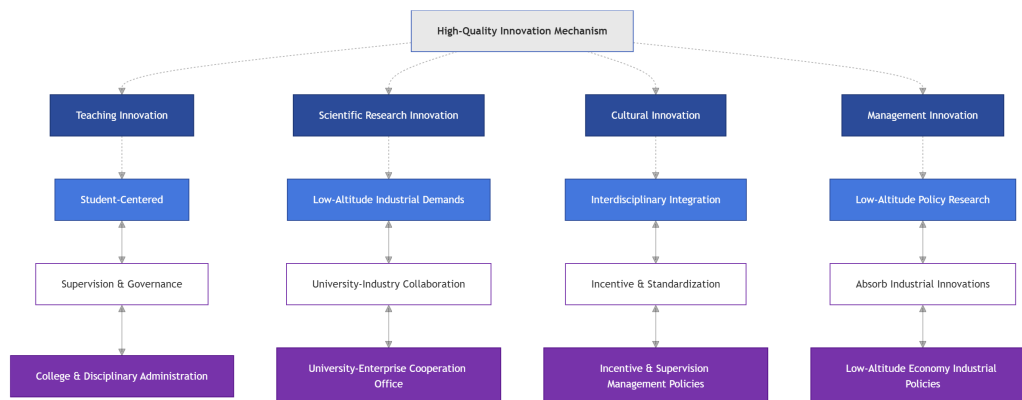


Figure 2. Four-dimensional innovation driving.

3.3. School-enterprise collaborative education ecosystem

Our major is collaborating with low-altitude economic enterprises. Improve school-enterprise cooperation by establishing a school-enterprise cooperation office. Specifically, it includes: dual mentor teacher team, innovative training platform, enterprise training, enterprise on-the-job internship, enterprise internship, and other methods.

The system integrates corporate culture, industrial teaching logic, and professional evaluation standards into the whole training process, realizing the combination of on-campus simulated practical training and off-campus post practice. The university undertakes students' foundational cultivation work by optimizing teaching conditions and guiding innovative learning and research. Cooperative enterprises provide personalized development for students, offer low-altitude economic scenarios, and provide internships and training for students. This model of cooperation between schools and enterprises helps students to grow rapidly and ultimately become valuable low-level economic talents.

4. Conclusion

Under the promotion of the above reform measures, the students trained have achieved good results. In June 2026, the first batch of 30 students majoring in Aircraft Manufacturing Engineering will graduate successfully, all of whom will receive degrees and graduation certificates, and all of whom will have high-quality employment. Among them, 16 students were

admitted to graduate school and further studied, while the remaining 14 students entered low-altitude economy-related enterprises for employment. During their four-year university studies, the students' innovative and practical abilities were significantly exercised.

Based on the disciplinary construction achievements of Tiangong University's Aircraft Manufacturing Engineering program, the School of Aerospace Engineering has obtained a series of key disciplinary and platform approvals. These include the approval of the interdisciplinary master's and doctoral program of "Low-altitude Technology and Engineering" in 2025, the first-level master's discipline of "Aerospace Science and Technology" in 2023, and Key Construction Majors for Emerging Engineering Education in Tianjin's Universities in 2024.

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References

- [1] Tan H, Qin S, 2025, New-Type Productive Forces Driving High-Quality Development of the Low-Altitude Economy: Fundamental Characteristics and Breakthrough Pathways. *Price Theory and Practice*, 2025(10): 62–68.
- [2] Zhou C, 2026, Accelerating the Establishment of a Safety Governance System for the Low-Altitude Economy. *Science and Technology China*, 2026(4): 56–62.
- [3] Yan M, Zhao W, Li L, et al., 2026, Research and Design of an Integrated Operational Service Platform for Low-Altitude Intelligent Internet. *China Information World*, 2026(5): 18–20.
- [4] Shu C, Guo J, Fang C, 2025, The Scale Effects and Spatial Differentiation Characteristics of China's Low-Altitude Economic Development. *Jiangxi Social Sciences*, 45(12): 54–66.
- [5] Liao H, Huo S, 2026, Recommendations for Leveraging Low-Altitude Economy to Promote the Innovative Development of Smart City Construction. *China Strategic Emerging Industries*, 2026(9): 69–71.

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