**M401093B Reliability Theory**

(2 credits, 32 class hours; Specialty Education Platform / Specialty Extention Elective Course Module; Applicable specialty: Automation; Prerequisites: Calculus(B), Probability Theory and Mathematical Statistics(B), Geometry and Algebra, Circuits, Signals and Systems)

This course mainly introduces the basic theory of reliability. Through the study of this course, students will be able to systematically master the basic concepts, methods and techniques of reliability, and initially possess the ability of reliability modeling, analysis and design. It provides the necessary basic knowledge and theoretical basis for subsequent professional courses.

The course content is divided into six parts. The first part mainly introduces modern quality concepts, the development process of reliability theory and the basic concepts of reliability, maintainability, and availability. The second part mainly introduces reliability, maintainability and availability characteristics and their commonly used distributions, as well as availability calculation methods. The third part mainly introduces reliability data collection, analysis, and reliability verification methods. The fourth part mainly introduces the reliability prediction and distribution method. The fifth part mainly introduces the FEMCA and FTA methods. The sixth part mainly introduces the commonly used reliability design methods.