机械与动力工程学院博士生资格考试笔试大纲

Syllabus of Ph.D. Qualification Examination (SJTU-ME)

*笔试主题 Exam Topic	测试及工程信号处理 Measurement and Engineering Signal Processing
*考核形式 Exam Format	闭卷考试，1 小时 Closed-book exam, 1 hour
*考核目标 Exam Target	通过计算或简答，考察同学对信号与系统、频谱分析、滤波器设计和时频分析等信号处理基本内容的理解和掌握程度，以此评估同学利用常用的信号处理工具对测试得到的动态信号进行分析和处理的能力。 Through the calculation or short answer questions, we assess the students' understanding and mastery of the basic contents of signal processing, such as signal and system, spectrum analysis, filter design and time-frequency analysis, so that we can evaluate the students' ability to analyze and process the dynamic signal obtained from the test by using the commonly used signal processing tools.
*考核内容 Exam Contents	1. 信号与系统 2. 傅立叶变换，连续时间信号的采样 3. z 变换及离散时间系统 4. 离散傅立叶变换、快速傅里叶变换 5. 平稳随机信号处理 6. 数字滤波器设计 7. 信号时频分析 1. Signal and system 2. Fourier transform, continuous time signal sampling 3. Z-transform and discrete time system 4. Discrete Fourier transform and fast Fourier transform 5. Stationary random signal processing 6. Digital filter design 7. Time frequency analysis of signal
*参考书目 References	1. 胡广书，《数字信号处理-理论、算法与实现》，清华大学出版社，2012 年第三版 2. 奥本海姆，《离散时间信号处理》中译版 2015 年第三版，电子工业出版社，黄建国、刘树棠、张国梅译
备注 Notes	