BOSTON UNIVERSITY
College of Engineering
Department of Aerospace and Mechanical Engineering

Information for Students Preparing for the AME Ph.D. Subject Qualifying Exam

1. INTRODUCTION

This document outlines the administrative and operational details of the Subject Qualifying exam for Ph.D. students in Aerospace and Mechanical Engineering (AME). This exam is held once a year in April. It consists of written and oral parts.

Goals: The exam is meant to determine the ability of the student to approach engineering problems in an organized and thoughtful manner; to think carefully about the underlying concepts; to explain the sequence of steps involved in formulating and solving a problem; and to justify any assumptions which simplify the formulation and/or solution.

Level: The exam generally probes engineering knowledge at the advanced undergraduate level.

2. RULES

All AME doctoral students must pass the examination within the first two times that it is offered after their matriculation. If a student chooses not to take the exam the first time it is offered, he/she will only have one opportunity to take the exam (i.e., during the second offering). Students who fail the exam in the first offering must retake the entire exam. Failing the exam twice results in withdrawal from the Ph.D. program.

Students must register for the exam in advance by completing the application form included at the end of this document and submitting it to the AME Graduate Coordinator. The application deadline is in early March.

3. FORMAT

Written Exam: The written part is a four-hour closed book exam. Each student is tested in the three topics that he/she has selected earlier on the application form. A committee of two or three faculty members per topic usually prepares the questions. The same committee administers the oral exam in that topic. The student must bring a calculator to the exam, but may not bring notes, texts or other reference materials.

Oral Exam: The oral part of the exam consists of three 30-minute sessions, one for each topic. Generally, two or three examiners will be present during each session. The oral exam takes place within a few days of the written exam, often the next day.

4. TOPICS

Each student chooses three of the following six topics in which to be tested. For each topic, the undergraduate courses at Boston University, which cover the equivalent materials are listed below.

I. Fluid Mechanics
B.U. Courses: EK 303, EK422

II. Thermodynamics, Heat Transfer, and Energy Conversion
B.U. Courses: EK 304, AM 419, AM 430

III. Propulsion and Aerodynamics
B.U. Courses: AM 405, AM 420

IV. Control of Mechanical Systems
B.U. Courses: AM 404

V. Dynamics and Vibrations
B.U. Courses: EK 301, EK 302, AM 441

VI. Solid/Structural Materials
B.U. Courses: EK 305, AM 307, AM 308

APPLICATION FOR AME PHD SUBJECT QUALIFYING EXAM

Boston University
College of Engineering
Department of Aerospace and Mechanical Engineering

Name	
Date of Admission	
Date of Exam	

Choose three of the following six areas to be covered on the exam:

- ❑ Fluid Mechanics
- ❑ Thermodynamics, Heat Transfer and Energy Conversion
- ❑ Propulsion and Aerodynamics
- ❑ Control of Mechanical Systems
- ❑ Dynamics and Vibrations
- ❑ Solid/Structural Mechanics

Signature: _____

Date: _____