

# **Background Requirements for Non-engineering BME Graduate Applicants**

Revised and approved by BMEGSC, Spring 2010

## **1. Calculus I**

### **Math 1151 (5)**

Differential and integral calculus of one real variable.

Prereq: A grade of C- or above in 1148 and 1149, or in 1144, 1150, or 150, or Math Placement Level L. Not open to students with credit for 1152 or 152.xx, or above. This course is available for EM credit. GE quant reason math and logical anly course.

## **2. Calculus II**

### **Math 1152 (5)**

Integral calculus, sequences and series, parametric curves, polar coordinates, (optional: vectors).

Prereq: A grade of C- or above in 1114, 1151, 1156, 114, 152.xx, 161.xx, or 161.01H. Not open to students with credit for any higher numbered Math class, or with credit for quarter-system Math courses numbered 153.xx or above. This course is available for EM credit. GE quant reason math and logical anly course.

## **3. Calculus III**

### **Math 2153 (4)**

Multivariable differential and integral calculus.

Prereq: A grade of C- or above in 1152, 1161.xx, 1172, 1534, 1544, 1181H, or 4181H, or credit for 153.xx, 154, 162.xx, or 162.01H. Not open to students with credit for any course 2153 or above, or for any quarter-system class 254.xx or above. This course is available for EM credit.

## **4. Ordinary and Partial Differential Equations**

### **Math 2415 (3)**

Ordinary and partial differential equations: Fourier series, boundary and initial value problems.

Prereq: 2153, 2162.xx, 2173, 2182H, or 4182H; or both 1172 and 2568; or 254.xx, 263.xx, 263.01H, or 264H. Not open to students with credit for 2255 (255), 5520H (521H), 2174, or 415.xx.

## **5. Electrical Circuits and Electronic Devices**

### **ECE 2300 (3)**

Introduction to circuit analysis; circuit analysis concepts and mechanical systems analogies; theory and applications of electronic devices; operational amplifiers; electrical instruments and measurements.

Prereq: Physics 1251 (132) or 1261, and Math 1172 (254), and CPHR 2.0 or above, and enrollment in College of Engineering. Not open to students with credit for 300, 309, or 320. Not open to students majoring in ECE.

## **6. Statics**

### **ME 2010 (2)**

Vector concepts of static equilibrium for isolated and connected bodies, centroids, inertia, truss, frame and machine analysis, and friction.

Prereq: Engr 1182 (Engineer 183) or 1187 (187) or 1192 (192H), and Physics 1250 (131), and Math 1152 or 1172 (254) or 1544 (154) or 2162 (263). Not open to students with credit for 2010H (210H), 2040 (410), or 400.

## **7. Introduction to Mechanics of Materials**

### **ME 2020 (3)**

Stress and strain analysis of deformable structural components subjected to unidirectional and combined loads; pressure vessels; stress transformations (Mohr's Circle); beam deflections; column buckling.

Prereq: 2010 (410) or 2010H (210H). Not open to students with credit for 2040 (420).

-OR-

## **6 & 7. Statics & Strength of Materials**

### **ME 2040 (4)**

Vector concepts of static equilibrium, truss, frame and machine analysis. Stress and strain analysis of deformable structural components; stress transformations; beam deflections; column buckling.  
Prereq: Engr 1182 or 1187 (Engineer 187) or 1282H (192H) or Engineer 183, and Physics 1250 (131), and Math 1172 (254) or Math 1544 (C- or better) or Math 2162 (263). Not open to students with credit for 2020 (420).

## 8. Mechanics, Thermal Physics, Waves Physics 1250 (5)

Calculus-based introduction to classical physics: Newton's laws, fluids, thermodynamics, waves; for students in physical sciences, mathematics, and engineering.

Prereq: 1 entrance unit of Physics or Chem. Concur: Math 1151 (152), 1161 (161), 1181H (161H), or 4181H (190H) or above. Not open to students with credit for 131. This course is available for EM credit. NS Admis Cond course. GE nat sci physical course.

## 9. Electricity & Magnetism, Optics, Modern Physics Physics 1251 (5)

Calculus-based introduction to electricity and magnetism, simple optics, modern physics including special relativity and quantum mechanics; for students in physical sciences, mathematics, engineering.

Prereq: 1250 (131), 1250H (131H), or 1260, and Math 1151 (152) or above; or permission of instructor. Concur: Math 1152 (153), 1161, 1172, 1181H, or 4181H. Not open to students with credit for 132. This course is available for EM credit. GE nat sci physical course. NS Admis Cond course.

Courses must be completed with a minimum 3.0/4.0 cumulative grade point.

Equivalent courses may be taken at another institution prior to applying to The Ohio State University Graduate BME Program.

The transfer credit database below may be helpful in identifying which courses you may be able to get transfer credit for or where to take courses that will count.

**<https://www.transfer.org/uselect/login.htm>**