A comprehensive list of suggested courses available on the VT campus which are suitable for different BMES theme areas is presented below.

The math requirement should complement the student’s research. Biomedical Engineering students should recognize that one of their significant contributions is their ability to quantify physical and biological phenomena. This ability can be extended into design, discovery, and prediction. The math requirement is intended to develop this ability and the student should make the course selection based on these criteria.

### Suggested VA Tech Math Courses for the Biomechanics Theme Area

- **ESM 5725-5726** Mathematical methods in engineering I, II
- **MATH 5245-5246** Ordinary differential equations
- **MATH 5425-5426** Applied partial differential equations
- **MATH 5444** Numerical methods for ordinary differential equations
- **MATH 5465-5466** Numerical analysis
- **MATH 5474/CS 5474** Finite difference methods for partial differential equations
- **MATH 5485-5486** Numerical analysis and software
- **MATH 5524** Matrix theory
- **MATH 5545-5546** Calculus of variations and optimal control theory
- **ME 5744** Methods of mechanical engineering analysis
- **STAT 5044** Regression and analysis of variance (ANOVA)
- **STAT 5615-5616** Statistics in research
- **CHE 5984** Engineering mathematics

### Suggested VA Tech Math Courses for the Cell & Tissue Engineering Theme Area

- **ESM 5725-5726** Mathematical methods in engineering I, II
- **MATH 5515-5516** Math methods for modeling & simulation of biological systems
- **MATH 5465-5466** Numerical analysis I and II
- **ME 5744** Methods of mechanical engineering analysis
- **STAT 5615-5616** Statistics in research
- **CHE 5984** Engineering mathematics

### Suggested VA Tech Math Courses for the Imaging Theme Area

- **MATH 5425** Applied partial differential equations
- **MATH 5474** Finite differences
- **MATH 5465-5466** Numerical analysis I and II
MATH 5474/CS 5474  Finite difference methods for partial differential equations
MATH 5485-5486  Numerical analysis and software
CHE 5984     Engineering mathematics

Suggested VA Tech Statistics Courses

STAT 5044  Regression and analysis of variance (ANOVA)
STAT 5013  Introduction to statistical program packages
STAT 5104  Probability and distribution theory
STAT 5204  Experimental design and analysis
STAT 5594  Topics in biostatistics
STAT 5605-5606  Biometry
STAT 5615-5616  Statistics in research

Updated September 3, 2009