

Exam Topic Area: Dynamics

Questions on the exam will be thought-provoking, but can be solved with a thorough understanding of the foundations of the topic area. Question difficulty will generally be at the level of challenging undergraduate material, and often require understanding and application of multiple concepts to come to the correct solution.

Questions will test the student's ability to derive and apply fundamental dynamics principles. Students will be allowed to bring a one page (front and back) equation sheet which must be submitted with the exam. On the equation sheet can be equations, notes about the equations, etc. but worked-out solutions to problems will not be allowed. Non-programmable calculators will be provided but may not be needed. Any necessary tables or figures will be provided with the exam.

Reference List:

- Meriam, Kraige and Bolton, "Engineering Mechanics: Dynamics", 8th Edition, Wiley, 2016 (Chapters 1-6, 8, Appendices)
- Beer, Johnston, Cornwell and Self, "Vector Mechanics for Engineers: Dynamics", 11th Edition, McGraw-Hill, 2015 (Chapters 11-17, 19, Appendices)

Questions will be drawn from the following list of topics:

- Kinematics of Particles
- Kinetics of Particles: Newton's Second Law
- Kinetics of Particles: Energy and Momentum Methods
- Systems of Particles
- Kinematics of Rigid Bodies
- Kinetics of Rigid Bodies: Newton/Euler Methods
- Kinetics of Rigid Bodies: Energy and Momentum Methods
- Free, Damped and Forced Particle and Rigid Body Vibrations

Undergraduate courses offered in this area:

Courses listed here are for your reference only and may be helpful for relearning/reviewing the material. Questions on the exam are limited by the topics list and reference list, not by the material covered in this (these) course(s):

- ME 313 – Dynamics