

ENGINEERING MECHANICS

COURSE INFORMATION

by

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ENGINEERING MECHANICS

- SUBJECT CODE : BAA 1113
- CREDIT HOURS : 3
- CONTACT HOURS : 3



Synopsis

This course is the fundamental of most engineering courses that introduces the concept of statics and dynamics:

1. Statics is the study of forces on object or bodies which are at rest or moving at a constant velocity, and the forces are in balance or in static equilibrium
2. Dynamics is the study of forces on moving bodies and the forces are in dynamic equilibrium
3. Both concept of mechanics is useful when it comes to analyze stress, designing of machines, structures and hydraulics



Course Outcome

By the end of this course, students should be able to:

- CO1: Describe the fundamental concept of static and dynamic in mechanics system for engineering applications
- CO2: Analyse the concept of static mechanics system which studies the effects and distribution of forces of rigid bodies at equilibrium condition
- CO3: Analyse the concept of dynamics mechanics system which studies the movement of rigid bodies described by the laws of kinematics and application of Newton's law



Assessment/Course Work

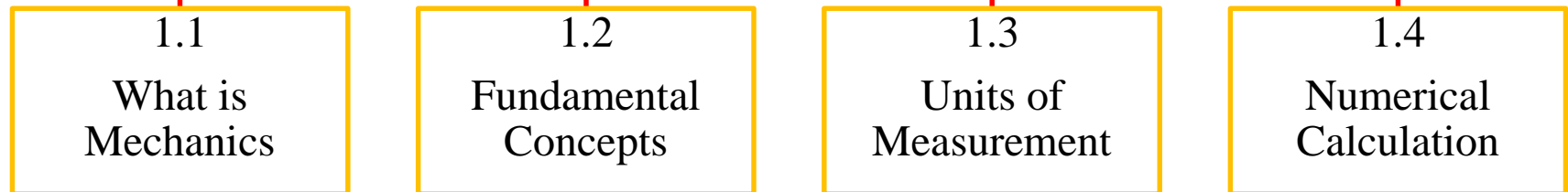
| DISTRIBUTION (%) | | CO1 | CO2 | CO3 |
|------------------------------|-------|-----|-----|-----|
| QUIZ (1&2, 10M EACH) | 10% | 10% | | |
| ASSIGNMENT (1&2,20M EACH) | 10% | | 5% | 5% |
| MID TERM EXAM (50M) | 20% | | 20% | |
| PROJECT (100M) | 20% | | | 20% |
| FINAL EXAM (100M) | 40% | | 30% | 10% |
| TOTAL | 100 % | 10% | 55% | 35% |

Course Contents

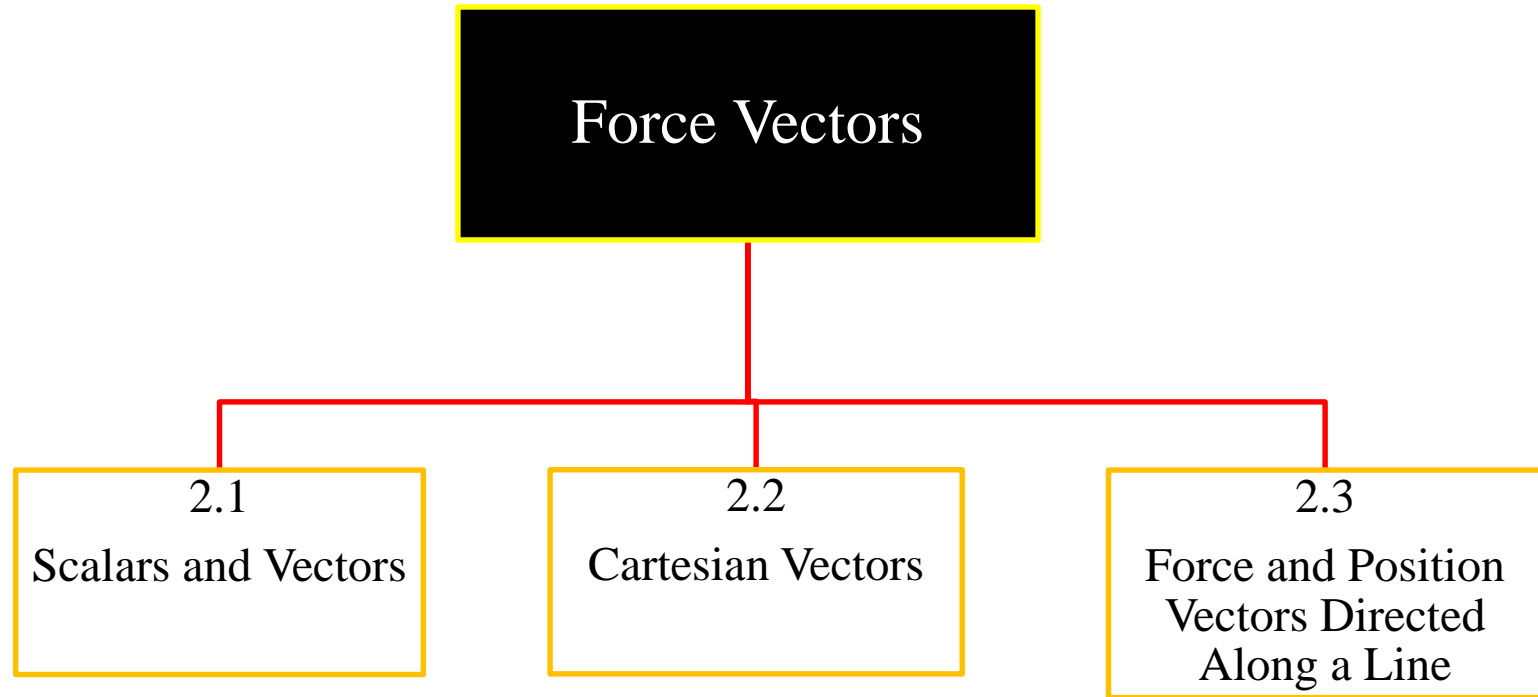
- Topic 1: General Principles
- Topic 2: Force Vectors
- Topic 3: Equilibrium of a Particle
- Topic 4: Force System Resultants
- Topic 5: Equilibrium of Rigid Body
- Topic 6: Centre of Gravity and Centroid
- Topic 7: Moment of Inertia
- Topic 8: Kinematics of a Particles
- Topic 9: Kinetics of a Particle: Force & Acceleration
- Topic 10: Kinetics of a Particle: Work and Energy

TOPIC 1

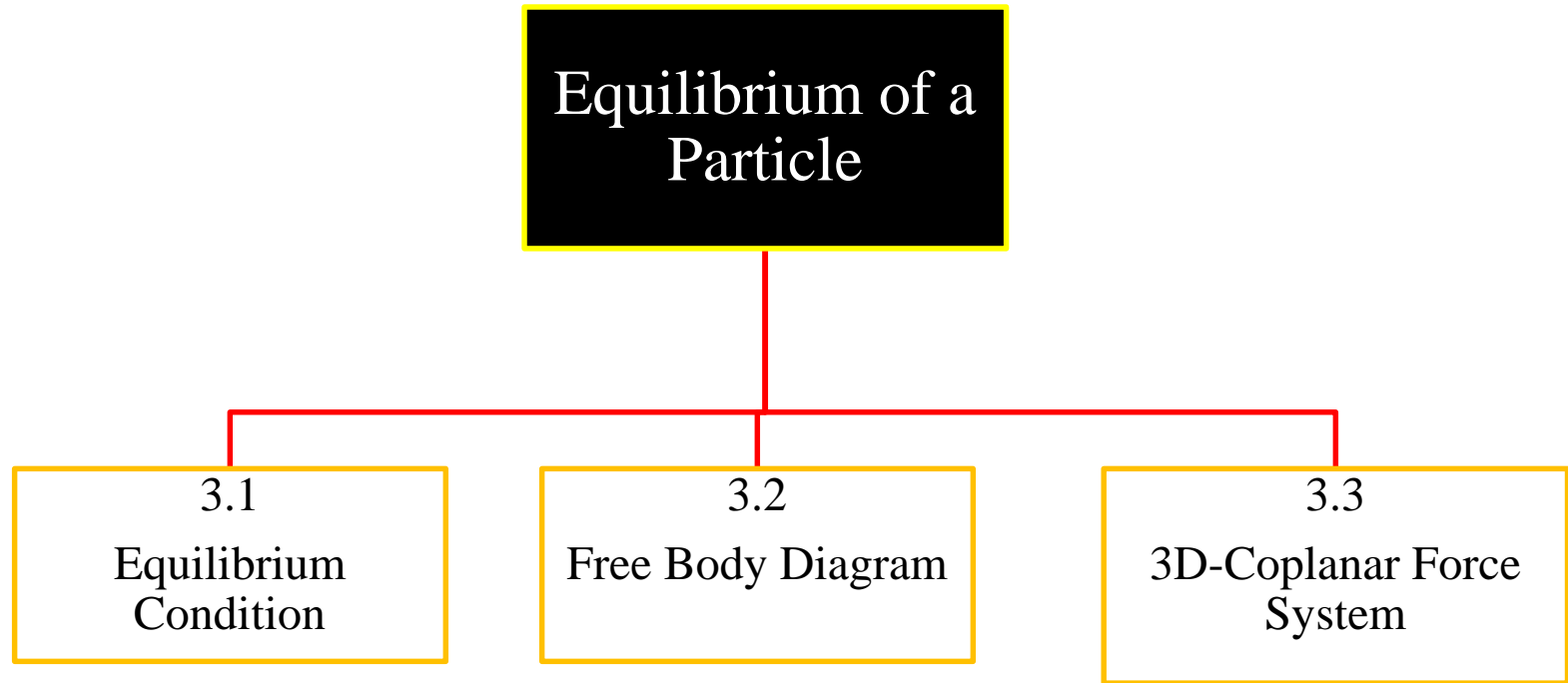
General Principles



TOPIC 2

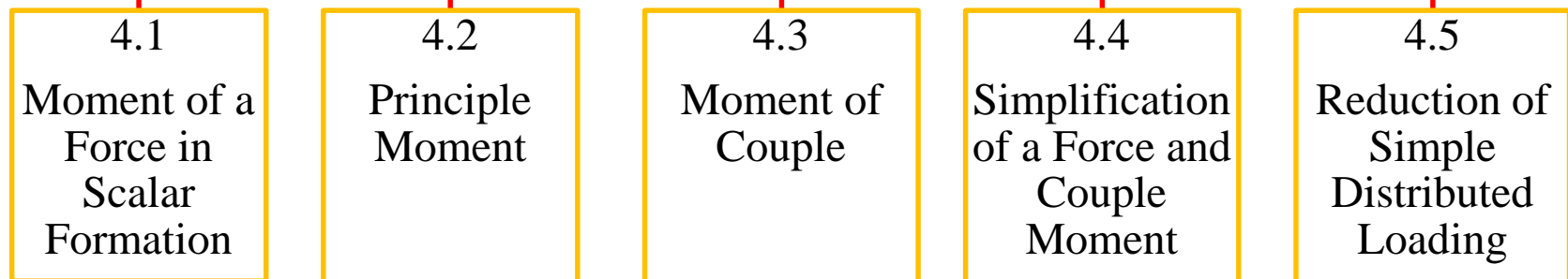


TOPIC 3



TOPIC 4

Force System Resultants



TOPIC 5

Equilibrium of a Rigid Body

5.1

Equilibrium Condition

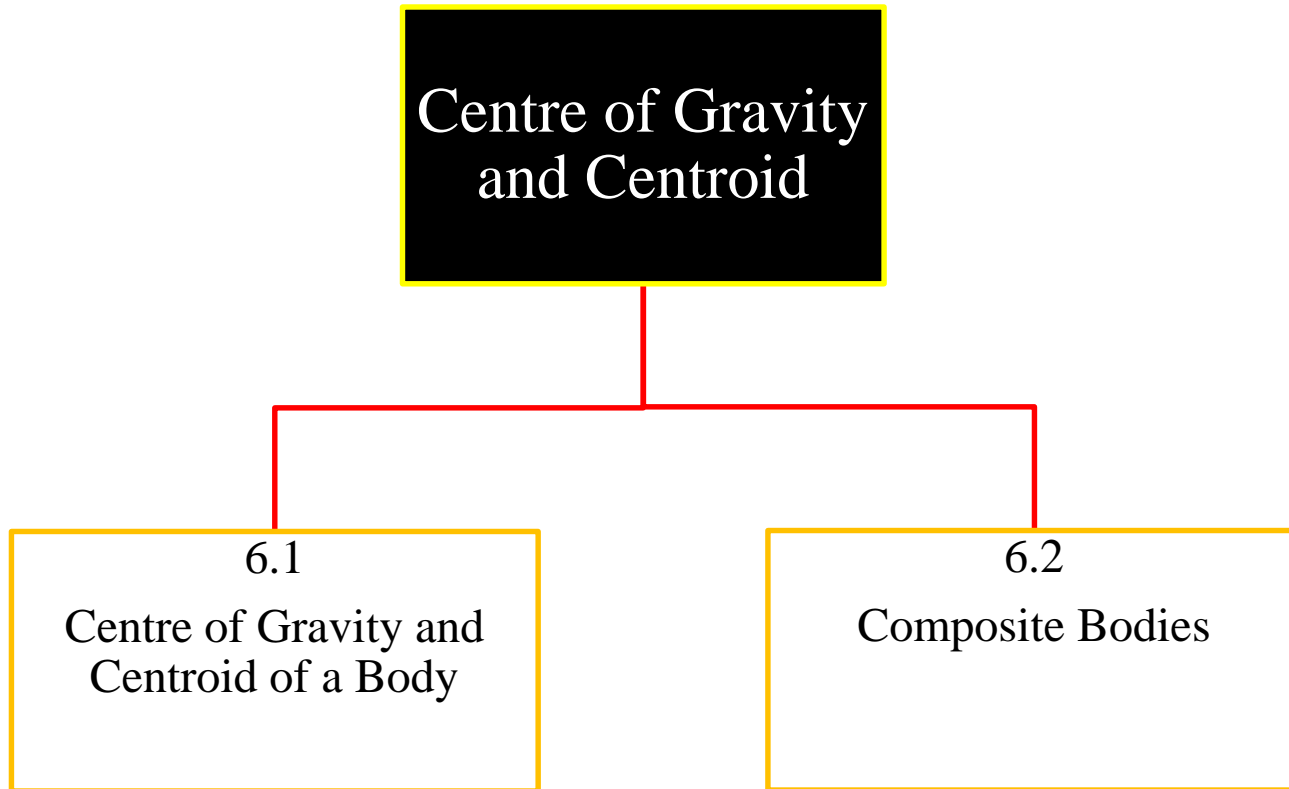
5.2

Free-Body Diagram

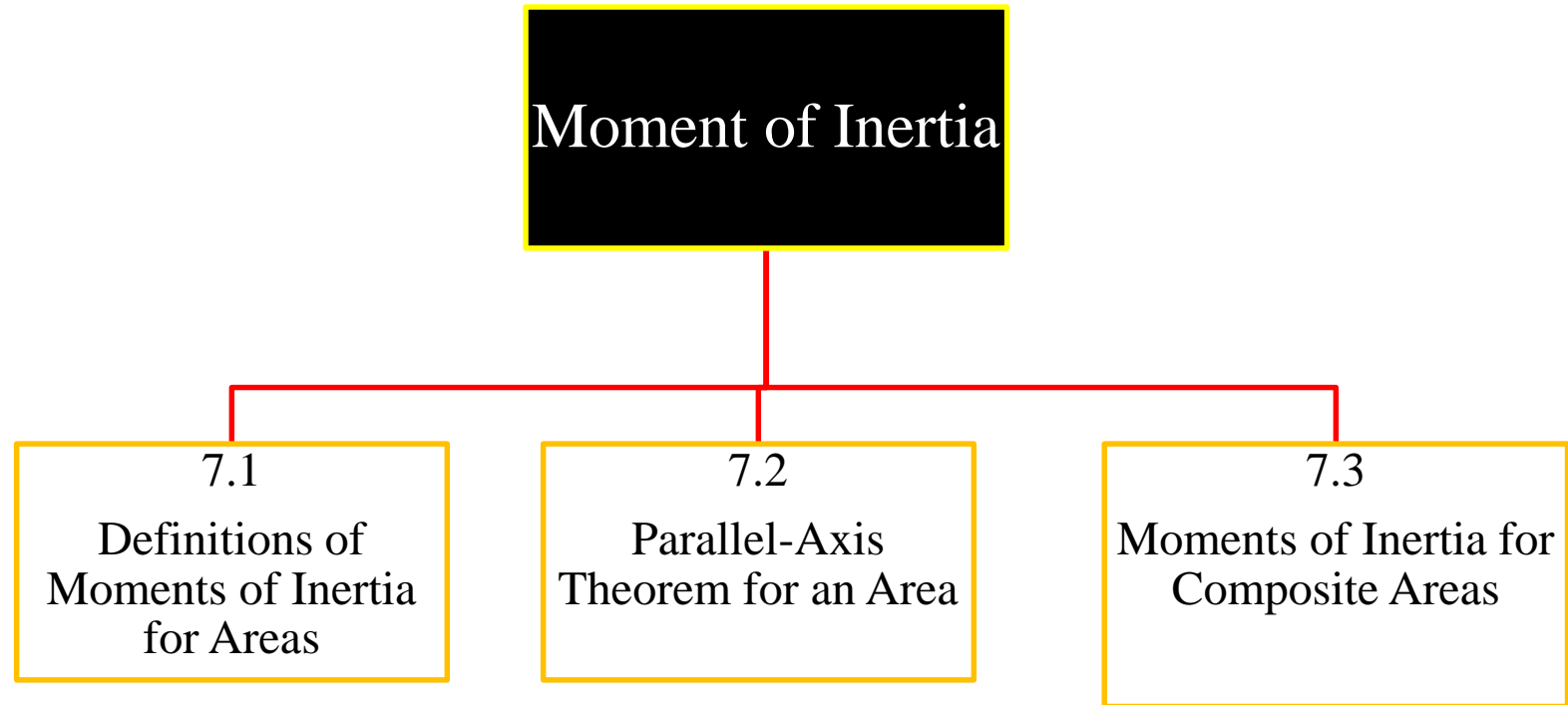
5.3

Two and Three Force
Members

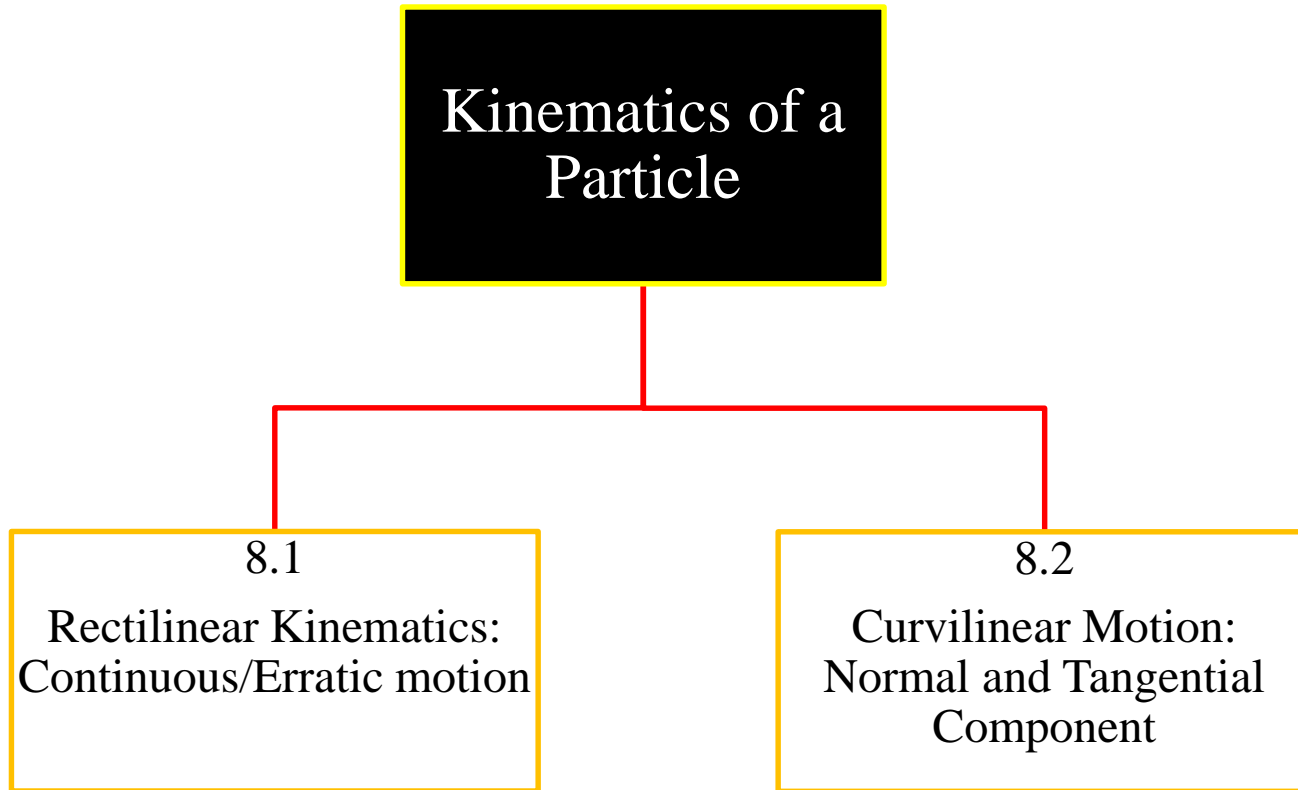
TOPIC 6



TOPIC 7



TOPIC 8



TOPIC 9

Kinetics of a Particle: Force and Acceleration

9.1

Newton's Second Law of Motion

9.2

The Equation of Motion

9.3

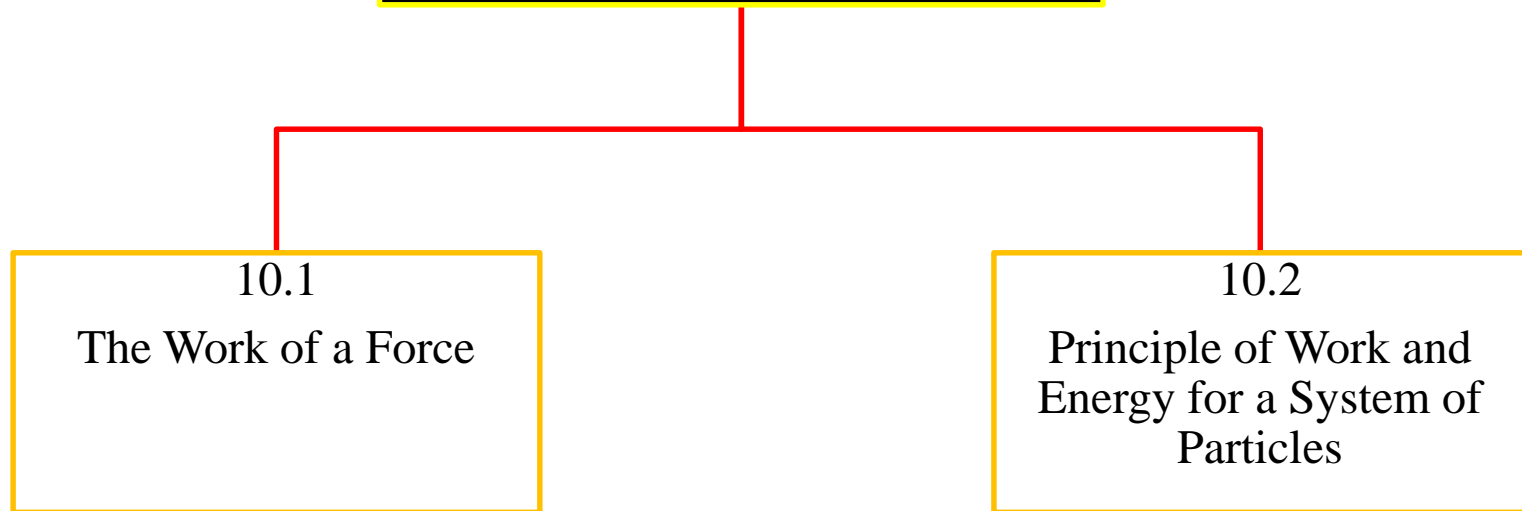
Equation of Motion for a System of Particles

9.4

Equations of Motion: Normal and Tangential Coordinates

TOPIC 10

Kinematics of a Particle: Work and Energy



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