BHARATHIDASAN UNIVERSITY

Tiruchirappalli- 620024,
Tamil Nadu, India

Department of Physical Education and Yoga

Course Title : KINESIOLOGY AND BIOMECHANICS
Course Code : 21BPE42

Unit- (V)

Dr. M. RAJESWARI,

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GUEST LECTURER

Course Content

I. Introduction to the Course

II. Biomechanical Concepts Related to Human Movement

III. Anatomical Concepts Related to Human Movement

IV. Applications in Human Movement

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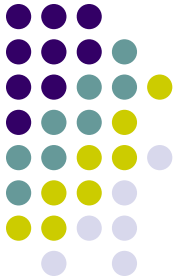
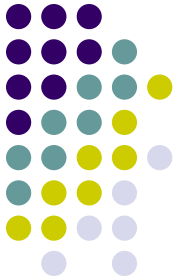
Biomechanical Concepts



A. Basic Kinematic Concepts
B. Vector Algebra
C. Basic Kinetic Concepts

Biomechanical Concepts



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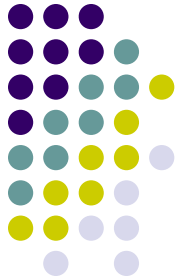
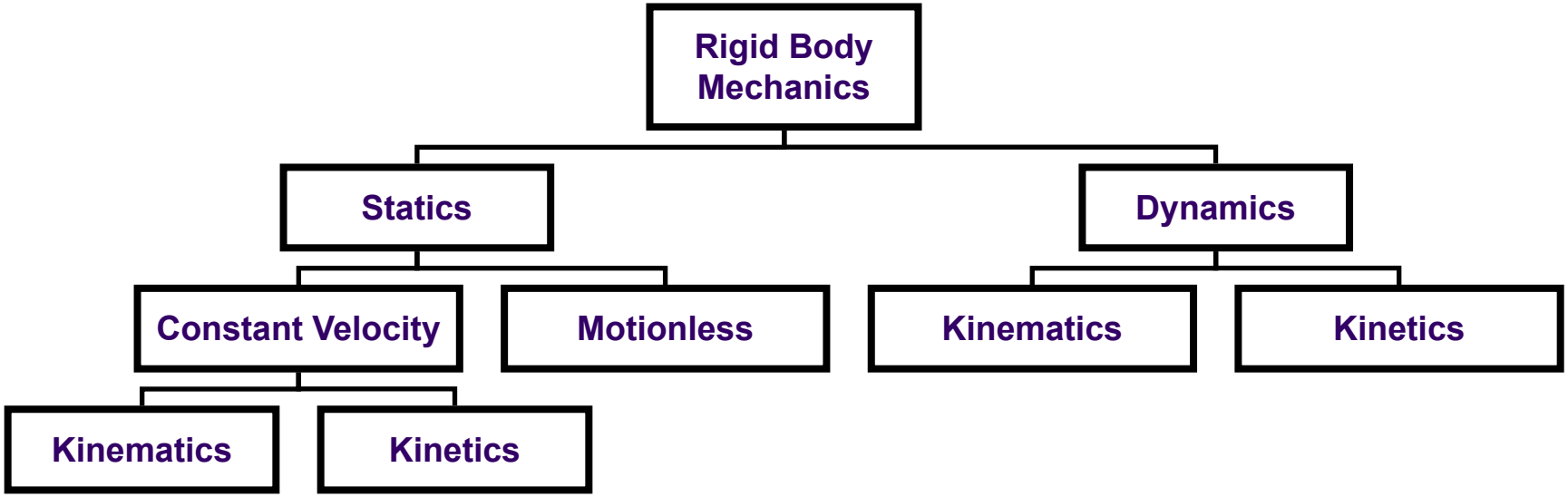
Basic Kinematic Concepts



1. Variables for Describing Motion
2. Reference Systems for Describing Motion of the Human Body and Its Segments
3. Guidelines for Describing Motion of the Human Body and Its Segments

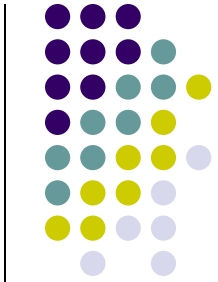
Rigid Body Mechanics



What is kinematics?

- Spatial and temporal characteristics
- Qualitative or quantitative
- Linear & angular motion

Why use kinematics?

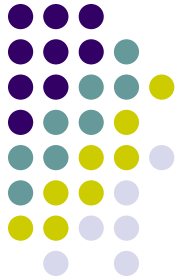


- Practical: Provides a standard for us in performing, teaching, or evaluating a skill
- Research: Once we describe, we can ask why?

Problem with kinematics?

- Practical: Proper kinematics does not always mean proper force application

Kinematic Variables

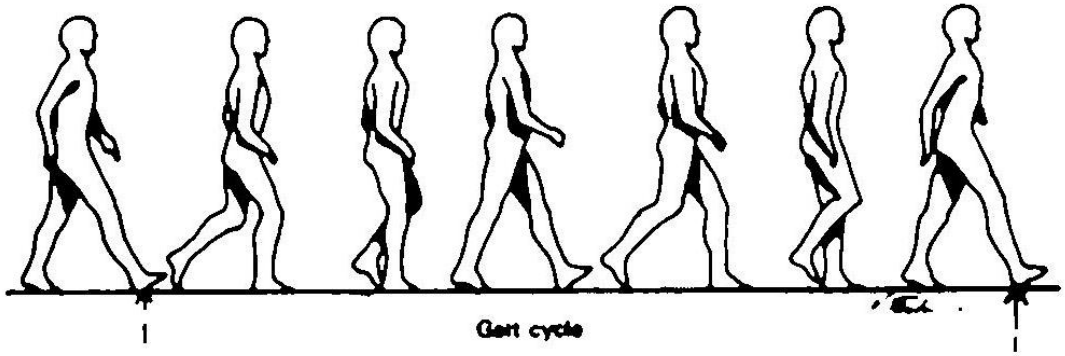


- Time
- Position
- Displacement & distance
- Velocity & speed
- Acceleration

Time – Temporal Analysis

WHEN?
HOW OFTEN?
IN WHAT ORDER?
HOW LONG?

- Most basic analysis
- Examples:
  - Cadence
  - Stride time
  - Temporal patterning



Temporal Patterning