PLANT ANATOMY Lecture 2 - Plant Anatomy & Plant Morphology

I. **Plant anatomy vs. plant morphology (Webster's Dictionary)**
- A. **Morphology - structure of an organism considered as a whole; deals with form and structure without regard to function**
- B. **Anatomy - dissection of an organism in order to determine the position, structure, etc. of its parts; critical analysis**
- C. **Plant anatomy (BIO 4354) - deals with internal structure of extant (living or existing) seed plants**
  - 1. **Angiosperms (and some gymnosperms) emphasized**
  - 2. **Anatomy addressed as a structural and functional science**
    - a) **Plant physiology stressed to gain better insight and understanding of anatomical structure**
  - 3. **General outline**
    - 1. **Morphology - where it is (and what it does)**
    - 2. **Cell theory - cell structure and function**
    - 3. **Tissue and cell types - dermal, ground, or vascular**
    - 4. **Anatomy of cell types - epidermis, parenchyma, collenchyma, sclerenchyma, xylem, and phloem**
    - 5. **Tissue systems in roots, stems, leaves, and flowers**
    - 6. **Fruits, seeds, and seedlings**

II. **Plant morphology**
- A. **Roots - plant organ that functions in anchorage and absorption**
- B. **Stems - plant axis with leaves or enations (small leaves as in the whisk fern)**
- C. **Leaves - flattened, usually photosynthetic structure arranged in various ways on a stem**
- D. **Flowers - specialized reproductive structure in higher plants consisting of a stem and modified leaves**

III. **Where do plants and new plant material come from?**
- A. **DNA ====> RNA ====> protein**
- B. **Cell and cell division - mitosis and meiosis**
- C. **Apical meristems**
  - 1. **Differentiation - physiological and morphological change occurring in a cell, a tissue, an organ, of a plant during development from a meristematic, or juvenile, stage to a mature, or adult stage**
  - 2. **Specialization - change in structure of a cell, a tissue, plant organ, or entire plant associated with a restriction of functions potentialities, or adaptability to varying organs.**
  - 3. **Morphogenesis - sum of phenomena of development and differentiation of tissues and organs**