EAS 233 Geologic Structures and Maps: Synopsis of Topics.

II. Orientation of lines and planes

A. Measuring orientation

1. Basic angles

- a) Relative to north: azimuths
- b) Relative to horizontal: inclination

2. Lines

- a) Trend
- b) Plunge
- c) Recording the data

3. Planes

- a) Dip
- b) Strike
- c) Dip direction
- d) Recording the data

4. Line in a plane

- a) Rake or pitch
- b) Recording the data

B. Contour representations of lines and planes

1. Topographic contours

2. Structure contours

3. Linear features on contour maps

4. Contours and cross-sections

- a) Apparent dip
- b) Vertical exaggeration

5. Time-structure contours

C. Stereographic representation of lines and planes

1. Principles

- a) Principle of stereographic (equal-angle) projection
- b) Wulff net
- c) Primitive, great and small circles

2. Basic plotting operations

- a) Plot of a line
- b) Plot of a plane and its pole
- c) Plot of a line in a plane

3. Calculations

- a) Plane common to two lines
- b) Angle between two lines
- c) Line perpendicular to two lines
- d) Intersection of two planes
- e) Plane perpendicular to two planes
- f) Angle between two planes

III. Primary structures

A. Primary structures in sedimentary rocks

1. Stratification

- a) Map-scale units: formations, groups, members
- b) Outcrop-scale: bedding, lamination
- c) Thickness calculations

2. Structures generated by currents, way-up indicators

- a) Bedforms and cross-stratification
- b) Sole markings

3. Structures generated by soft-sediment deformation

B. Primary structures in igneous rocks

1. Intrusions

2. Volcanic rocks

C. Unconformities

- a) Disconformity
- b) Angular unconformity
- c) Nonconformity