
NATR 142
Plane Surveying
Fall 2023

First Examination Study Guide

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- Define surveying.
- List and discuss the three main reasons for surveying.
- Discuss the difference between geodetic and plane surveying, and reasons why each is used today.
- Discuss the importance of proper field notes and list four of the several points to remember about field notes.
- List and discuss three of the five basic requirements of good field notes.
- List a type of information best discussed by each: tabulation, description, and diagrams.
- Discuss the reasons for listing the date, weather instrument, and party information in good field notes, and why notes should be original and without erasures.
- Know the English and metric units for various surveying measurements and how to convert among units (standard conversions will be provided during the exam).
- List and give an example for each of the five types of surveying measurements.
- Discuss the differences among blunders or mistakes, systematic errors, and random errors, and discuss a source of each type.
- Know the difference between precision and accuracy.
- Describe the reasons for significant digits and apply the theory to problems.
- Be able to apply rounding rules to problems (as discussed in class).
- Know that distances in plane surveying are assumed to be horizontal distances.
- List the standard methods for measuring distances and the expected accuracy of each.
- List an application for pacing, taping, and EDM.
- List the purpose of each taping accessory and explain when it is used.
- List the jobs of the head and the rear tapepersons.
- List and discuss the procedure for proper distance measuring with a steel tape.
- Discuss “breaking tape” and other methods of measuring distances on steep slopes.
- List five of the nine common sources of taping errors and list how to minimize them.
- Know how to calculate areas using rectangles, circles (including circular sectors), and triangles.

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First Examination
Equations Sheet

1 ch = 100 links = 66 ft = 4 rods

1° = 60'; 1' = 60"; 1° = 3600"

1 yd = 3 ft

1 m = 3.2808 ft

1 mi = 5280 ft = 1.609 km

1 ac = 43,560 ft²

1 ft = 12 in

$$A = \sqrt{s (s-a) (s-b) (s-c)}$$

$$s = \frac{a + b + c}{2}$$

$$A = \frac{a b (\sin \alpha)}{2}$$

$$A = \pi r^2 \frac{\alpha}{360^\circ}$$

$$A = a b$$