# GPS & GIS | Midterm Exam

***\*\*Email your completed exam by 10 a.m. on November 8, 2016 as a single PDF\*\****

This exam is open book and open note. Answer the questions as completely as you can. **All answers should be typed and spellchecked.** Where appropriate, describe the actual steps you would use (in both the office and GPS receiver software) in order to answer a particular question.

**Part I. Short answer (3 pts each)**

1. What are the three components of the GPS system?
2. What is the datum of NAVSTAR?
3. Elevation in the GPS position uses what reference frame?
4. If during the differential correction process, I choose the “Use reference position from base provider” in Pathfinder, what will the datum of my corrected data be?

**Part II. Long(er) answer (10 pts each)**

1. Explain the concept of differential correction. Describe the configuration of a real-time process and of a post-process.
2. What are the three types of errors that can occur in the GPS system? Describe an example of each type and how it could be corrected or reduced.
3. Discuss the difference between precision and accuracy with respect to GPS.
4. You need to map the extent of a toxic spill but you cannot come into physical contact with the contaminated area. How would you proceed in order to accurately map the size and location of this polygon to better than one meter horizontal accuracy?
5. You are mapping a linear feature, such as a fence line, that is several kilometers in length; what technique would ensure that you capture the most accurate representation of the fence? You also expect to encounter various point features while mapping the fence; what technique would be most appropriate to map these point features without having to first map the entire fence line?

**Part III. GPS Application (28 pts total)**

1. Create two (2) **sets** of shapefiles from the Midterm data, one uncorrected and one corrected. Include these attributes:
   * PDOP
   * Correction Status
   * Receiver Type
   * Date Recorded
   * Data file name
   * Total positions
   * Filtered positions

Create a simple map comparing the two feature sets and insert it into your midterm document.

1. Explain the difference between the corrected & uncorrected datasets. Which one do you think is more accurate and why?