

SURVEY TECHNIQUES

PURPOSE

The purpose of this course is to provide the basic academic and field skill to permit the avocational archaeologist the ability to participate in survey projects of the Arizona Archaeological Society (AAS), and to provide assistance to the professional community, as may be requested.

OBJECTIVES

At the completion of this course, the student is able to:

1. Determine the purpose of survey and the various types of survey forms which exist.
2. Understand the difference between the terms "site" and "non-site."
3. Name and define the various kinds of archaeological sites known to exist in the American Southwest.
4. List the various types and functions of tools used by the archaeologist during survey projects.
5. Display the ability to use and plot site location on USGS topographic maps; also know of other various map types.
6. Learn the three principal site designation formats currently in use within Arizona.
7. Understand the principles in site discovery and recognition.
8. Explain how a site is mapped and surface collected and/or sampled.
9. Indicate the use of photography and its importance in data collection; the same for aerial photography and its importance in site discovery and location plotting.
10. Interpret the meaning of artifacts as they relate to time and cultural recognition, plus interpretations of possible site function.
11. Understand the importance of site spatial relationships and survey work/interpretation.
12. Understand both the positive and negative aspects of predictive modeling and its relationship to archaeological survey.

COURSE FORMAT

The student is to receive a minimum of twenty hours of classroom instruction, coupled with forty hours of actual field experience. Within the field work requirements, the following conditions must be met.

1. The student surveyor is to be aware of at least two different environmental settings such as desert, mountain, or plateau.
2. The student surveyor is to experience in the field at least two different survey methods such as sample transect, and systematic large-area block).

Normally, the fieldwork requirements are fulfilled by work on at least five different days. The last four hours of field work are spent in finalizing field notes, site recording forms, site maps, field maps, and any additional administrative tasks.

A brief final report of field work undertaken, along with the successful completion of all written and administrative work assigned, coupled with the instructor's evaluation of both the student's classroom and field work, determines the student's successful completion of this course.

COURSE OUTLINE

A. Some general concerns

1. Principles of survey
2. Organizational aspects of survey
3. Reasons for survey
 - a. Academic
 - b. Cultural resource management
 - c. How reasons for survey affect how a survey is undertaken
4. Demands of survey
 - a. Good physical condition
 - b. Proper clothing and safety precautions
 - c. Field logistics
5. General survey techniques
 - a. Permits and clearance to do the project and survey particular land areas (i.e., land ownership)
 - b. Background research before entering the field
 - Historical maps, photographs, reports
 - Recent field work, maps reports
 - c. Determining site numeric designation system
 - The MNA system
 - The ASM system
 - The ASU system
 - The Forest Service system
 - The BLM system (part of the ASM system)
 - The Smithsonian Institution system

- B. Discovery factors
 - 1. Problem formation
 - 2. Sampling design
 - a. What is sampling?
 - b. Sample types
 - Complete
 - Random
 - Stratified
 - Systematic
 - Stratified random
 - Others
 - c. Sampling in relation to survey - survey types
 - Sample surveys
 - Block-area surveys
 - 3. Aerial photography, its use in survey
 - a. Stereo-viewing
 - b. Topography review/survey for course plotting
 - c. Site discovery
 - d. Locational plotting
 - 4. Determining survey boundaries
 - 5. Boundary effects
 - a. Linear transects, interception theory
 - b. Quadrant block units, boundary bias
- C. Site survey
 - 1. Site types
 - a. Composition of sites
 - Clustered artifacts: the archaeological site
 - Non-clustered artifacts
 - A discussion about "non-sites"
 - b. Judging site contents
 - Site size and configuration
 - Surface artifact densities
 - Architectural features
 - c. Southwest site variability
 - Recognition of pithouse depressions
 - Pueblo trash and masonry deposits
 - Artifact scatters (surficial)
 - Artifact scatters as indicators of subsurface features
 - Recognition of agricultural features
 - d. Southwest site types

<ul style="list-style-type: none"> • Habitation • Midden • Quarry • Kill • Trading center • Ceremonial • Burial 	<ul style="list-style-type: none"> • Surface scatter • Rock Art • Multi-Component • Stratified • Non-stratified • Disturbed deposits (Plowzone)
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e. Site formation process

C. Site Survey (continued)

2. Transformation Processes: as they affect site visibility and recovery/recognition survey work
 - a. Natural transformations
 - b. Cultural transformations
3. Environmental variables and survey techniques: the impacts of variation in:
 - a. Soils
 - b. Topography
 - c. Slope
 - d. Vegetation
 - e. Climate
 - f. Sunlight, shadow, reflection
 - g. Surveyor's physical and mental state: tiredness factor
4. Survey techniques
 - a. Transects: Intensity (issues of surveyor spacing)
 - b. Walking the transect
 - Zig-zag patterns
 - Straight-line approach
 - c. Teamwork and co-ordination between staff and crew
 - There is no such thing as a dumb question or observation
 - Talk with each other about what you are seeing and doing
 - d. Assign specific crew-member responsibilities
 - Record keeping, site survey forms
 - Topographic map location
 - Site mapping
 - Site photography and aerial work
 - Site boundary determination, site marking (if warranted), site tag placement, artifact collections

D. Intensive examination of site surfaces

1. USGS Topographic maps
 - a. Types
 - 15 minute
 - 7.5 minute
 - b. Reading a map
 - Township, Range, Section
 - Miles, feet, acres, kilometers, meters, hectares
 - Elevations
 - UTM's
 - Longitude and latitude
 - Magnetic vs true north
 - c. Using a map
 - Triangulation
 - Map wheels
 - Dot-grid matrix
 - General locational plotting procedure

- d. Using a compass with a topographic map
 - Types of compasses
 - o Range Finder (Silva) compasses
 - o Brunton compass
 - Setting the declinations for both compasses
 - Walking a transect line with a compass
- 2. Other types or area/location maps
- 3. Site recording
 - a. Survey journal format
 - b. Site survey forms
 - Non-computerized forms
 - o Various types
 - o Their uses
 - o Benefits and drawbacks
 - Computerized forms
 - o Various types
 - o Their uses
 - o Benefits and drawbacks
 - c. A combination of survey form and journal formats
 - d. Determining a rationale for site survey form construction
- 4. Site mapping
 - a. Mapping techniques
 - Compass and pace
 - Compass and tape
 - Brunton tripod and tape
 - Alidade mapping
 - Wilde theodolite mapping
 - b. Establishing a permanent site datum (site tag placement)
 - c. Establishing N/S and E/W base lines
 - d. Use of typical mapping symbols for features, rocks, trees, artifact scatters, mounds, etc.
 - e. Precise methods vary from site to site and project to project
- 5. Field photography
 - a. Types of cameras
 - b. Types of film
 - c. Lighting conditions
 - d. Exposure settings
 - e. Scale, directional indicators, and photo identification
 - f. Keeping photographic records
 - g. Photographic distortion
 - Large scale objects
 - Small scale objects
 - h. Aerial photography of the site

E. Recovery operations

- 1. Surface collections
 - a. Judgmental collections
 - b. Probabilistic sampling collections
 - Collection transects
 - Grid system collections
 - Time/cost factors

1. Surface Collections(continued)
 - c. Methods of bagging collections
 - Specimen recording
 - Transportation problems with survey
2. Other (often subsurface) data collection methods frequently used on survey
 - a. Shovel scraping
 - b. Excavation of test soundings
 - c. Auger
 - d. Magnetometer
 - e. Sonar
3. Non-collection strategies
 - a. What are these?
 - b. Their benefits and drawbacks

F. Interpreting survey data

1. Interpreting artifacts
 - a. Analysis techniques for field use
 - b. Behavioral inferences
 - c. Classification systems
 - Cultural
 - Functional
 - Attributable
 - d. Description techniques
 - e. Determination of function
 - Context
 - Analogy
 - f. Determination of cultural associations
2. Spatial analysis of survey data
 - a. Settlement patterns
 - b. Locational analysis
 - c. Predictive modeling
 - Its use in survey
 - Its potential
 - Its handicaps and problems

REFERENCES

A. Suggested

Dacey, William S.
1981 *Archaeological Field Methods: An Introduction*. Burgess,
Minneapolis. Price is around \$10.00

B. Additional references:

Hester, Thomas R., Robert F. Heizer and John Graham
1975 *Field Methods in Archaeology*. Mayfield, Palo Alto. (A)*

Joukowsky, Martha
1980A *Complete Manual of Field Archaeology: Tools and Techniques of
Field Work for Archaeologists*. Prentice-Hall, Englewood Cliffs.

Spier, Robert F. G.
1970 *Surveying and Mapping: A Manual of Simplified Techniques*. Holt,
Rinehart, and Winston, New York.

* (A) In Phoenix Chapter Archives

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