

## SUMMER ARCHAEOLOGY IN THE SHADOW OF VESUVIUS: **Digital 3D Architectural Recording for Archaeology**

Restoring Ancient Stabiae foundation

University of Maryland, School of Architecture, Preservation and Planning (credit granting institution),  
three transfer-credit hours

Stabiae archaeological site, Castellammare di Stabia, ITALY



(arrival Sunday, June 18, departure, Saturday, July 8, 2017)

Residency at the Vesuvian Institute, RAS Foundation, double occupancy, private bath, full room and board, genuine Italian cuisine; cost \$3200 for three credit hours, University of Maryland.

Faculty:

Prof. Thomas Noble Howe, RAS Foundation, “coordinator general” (RAS director for master planning and archaeology)

Prof. Robert Lindley Vann, organizer and professor of record, UMd.

Docents/TA's: Senior docent/instructor, Adan Ramos, Will Deutsch, B.Arch UMd '16, and docents from students/alumni of the UMd School of Architecture.

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**This is an intensive three-week course in digital 3D recording of upstanding Roman architecture for archaeology** using combined techniques of high-precision surveying, hand drawing, 3D “drawing” with a reflectorless EDM (Electronic Distance Measurement) total station, photographs, AutoCAD, Photoshop, Illustrator, Faro LiDAR and Scene.

**This is not an introductory/academic exercise.** Students will acquire the actual operative skills to produce the season's formal archaeological drawings of the spectacularly well-preserved enormous Roman villas of Stabiae for the RAS Foundation and for the Superintendancy of Pompei, Ercolano and Stabia.

**Students with some architectural training will be better prepared, but serious students, with absolutely no experience in any of these techniques, have performed excellently with only three weeks training.**

“Even with no previous skills in any of these, it takes you from zero...to *something!*”

“It’s an amazing experience. It’s very intense and the last week is pretty stressful, when you are struggling with all the new skills you have just learned, to put together the sketches, the EDM fieldwork, AutoCAD wireframe, rectified photographs, LiDAR, your Illustrator tracings, and...make a presentation with your co-team members. And it all has to go together very, very precisely! But...it’s *real*. The drawings we produced will be used for decades to come.”

“I now have some real skills and experiences which I can put on my c.v.”

(“Follow” the 2015/16/17 field seasons on @sustabiae on Twitter.)

Video: <https://vimeo.com/184762274>

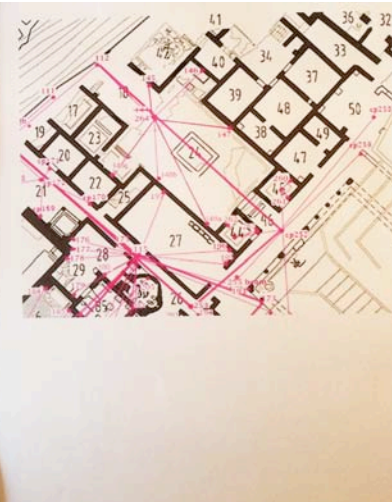
*Fondazione Restoring Ancient Stabiae*

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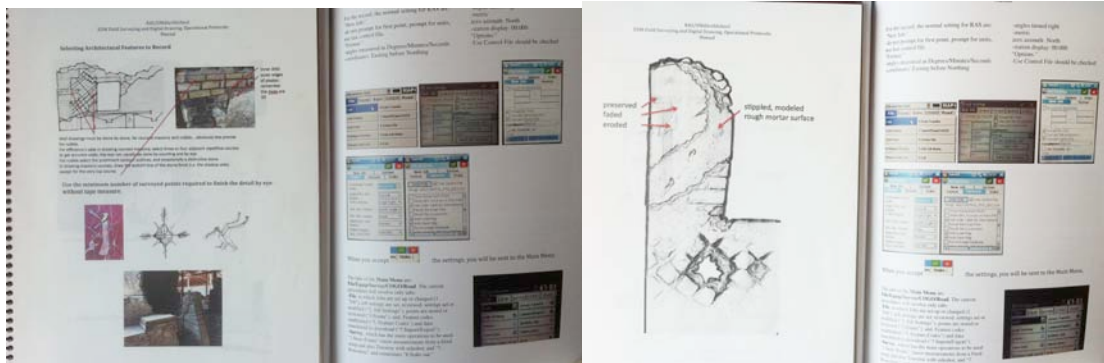
Sede USA: The Duke Ellington Building  
2121 Ward Court, NW  
Washington, D.C. 20037

**CURRICULUM**

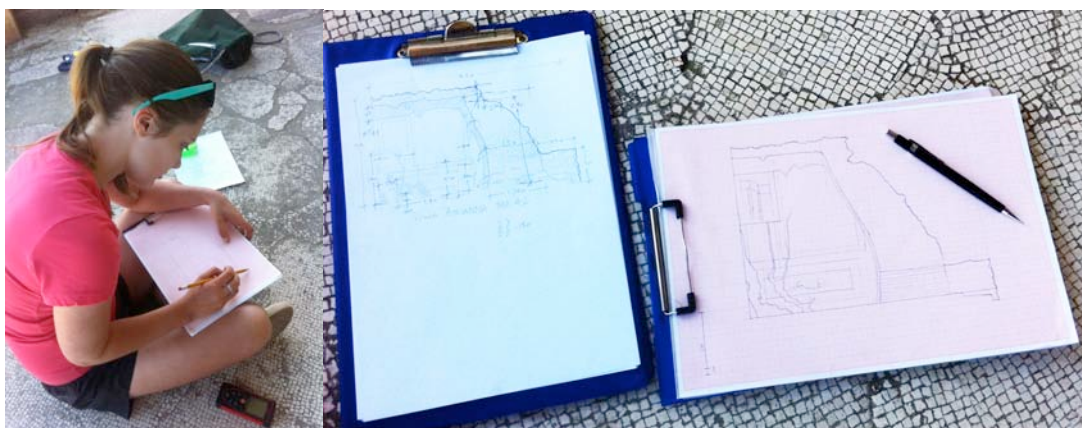
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CP124 main threshold, 11	80814	7048.2282	5555.6315	49.6403
CP124 J, door jamb, 11-12	80814	7048.2422	5555.6662	54.2606
CP124 J, 11	80814	7048.2622	5555.7292	54.7025
CP124 J, 11	80814	7050.1811	5555.6292	51.2627
CP124 J, 11	80814	7048.2022	5555.6315	49.6402
CP124 J, 11	80814	7048.2125	5555.6445	50.2245
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CP122 wall, threshold, 10	80812	7034.6091	5556.7501	49.6904
CP131 J, 10 remains on ca217	80812	7037.4911	5553.7881	50.8687
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CP135 J, 10 remains on ca219	80812	7033.6164	5550.8247	50.1362
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CP200 J, 5	80812	7106.6204	5559.8279	52.0405



High precision survey control is done before students arrive on the site.



A workbook lays out complicated procedures of the software command paths with the EDM total station, and protocols for hand drawing (line weights, materials, etc.).



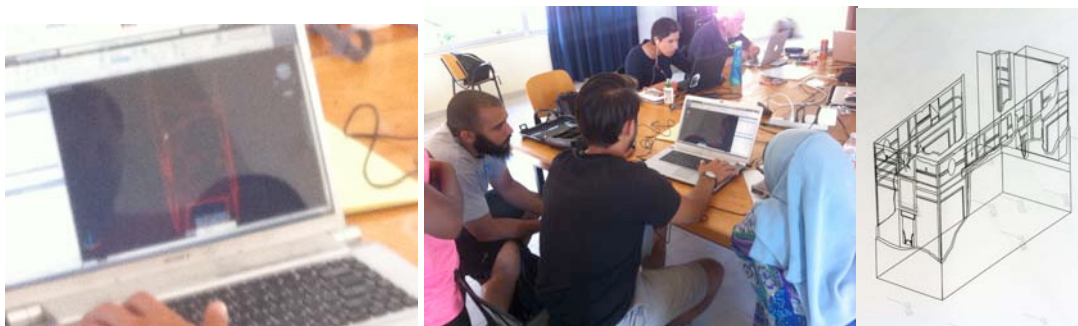
All students are assigned to a 4-person team which is responsible for 2-4 rooms in three weeks. They start with 1-2 days of hand drawings, practicing the line weight conventions, first freehand, then with tape. Even the most inexperienced drawers produce decent sketches by the second day. "It's not like just drawing a building any old way you want; it's got to be right!"



Student team members then are instructed on the EDM total station, how to set up by resection or backsight, how to handle the instrument safely and accurately, how to make judgments as to what features to “draw” with the line commands of the EDM. The 2 days of hand drawing make them very alert to what they are looking at. Students are usually able to operate and “draw” with the instrument the features of “their” room on their own (with oversight for a week) within two- to three and a half hours.



Hand drawing continues throughout the three weeks in the interstices between other tasks. Students continually “rethink” their walls and how to represent them.



Students download their EDM fieldwork as .dwg files and open them in AutoCAD as wireframe polylines. They then produce elevations and plans from the wireframe.

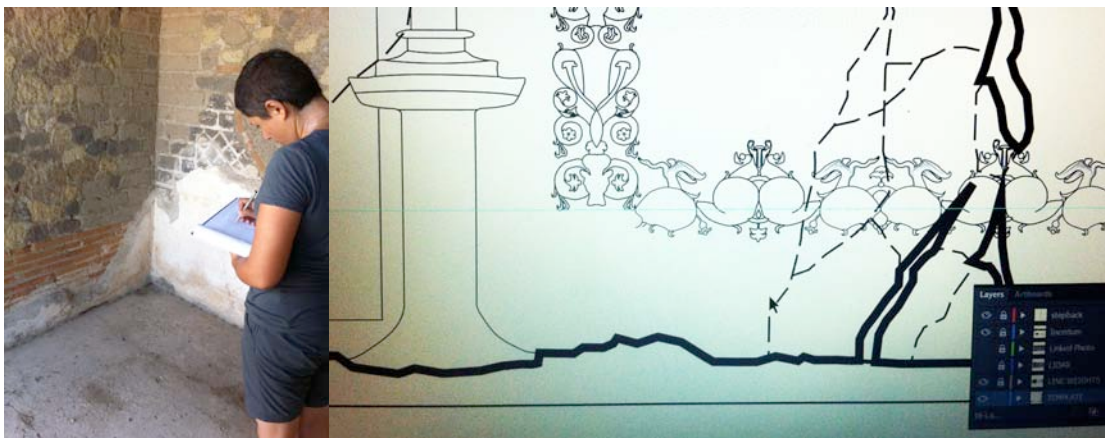


Students learn how to do record photographs of the walls of each room in a way to capture all details in good lighting and minimize initial perspective distortion.



Students then open the record photographs in Photoshop and “rectify” the perspective distortion of the photographs by keying numerous features to the elevations derived from the EDM wireframe elevation. The surveyed wireframe controls the accuracy of everything.

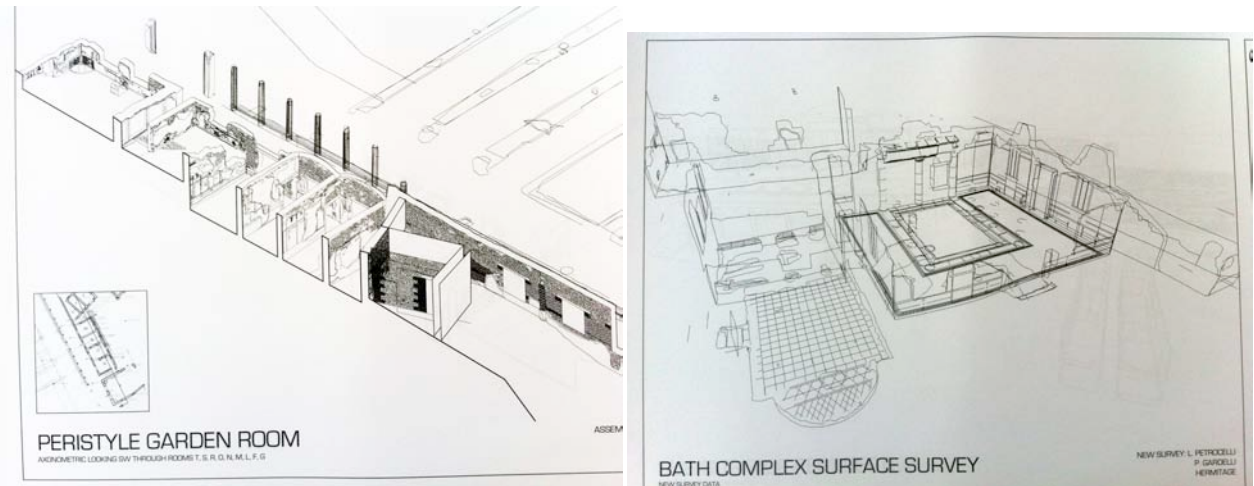
In Illustrator, students trace, in various line-weights, the features of the walls which they have already drawn several times in different ways.



Drawings are taken back to the field and field-checked. Corrections and modifications are made, critiques offered, details are added. Students frequently come up with innovative ways of recording details of their walls and make observations that have never been made before (like mistakes made by the Roman fresco painters).



Meanwhile, in intervals in the work, students are put on LiDAR recording teams. Over 100 setups were used to record the Villa Arianna in 2015. The Villa San Marco was scanned 2014. EDM and LiDAR registration are compared, yielding, so far, centrimetric correspondence. A 2D plan .dwg is prepared of the Villa San Marco for the Superintendancy. For the fly-through of Villa San Marco, 2014, see: <https://www.youtube.com/watch?v=PFzXDUufaFs&feature=share>



Final 3D model is assembled and plans, sections, elevations, axonometrics are taken from it.



And, after three weeks, the team has dinner in Sorrento, packs up the classroom, and leaves...till next year. Student returnees are the core of the teaching staff. The skills learned here are useful for those who wish to become archaeologists, field architects, architects who may want to do historic preservation or do their own "as-built" drawings.