



The Hebrew University of Jerusalem

Syllabus

COMPUTERIZED ARCHAEOLOGY IN 3-D - 43617

Last update 06-04-2020

HU Credits: 2

Degree/Cycle: 1st degree (Bachelor)

Responsible Department: Archaeology & Ancient near East

Academic year: 0

Semester: 2nd Semester

Teaching Languages: Hebrew

Campus: Mt. Scopus

Course/Module Coordinator: Ms. Ortal Harush

Coordinator Email: Ortal.haroach@mail.huji.ac.il

Coordinator Office Hours: By mail

Teaching Staff:

Ms. Ortal Haroch

Course/Module description:

The course will present current developments in 3-D technology for archaeological documentation and research.

The course will present in detail various documentation methods from stone tools to ceramic vessels and coins. From artifacts that are the size of olive pits to structures. In addition, the course will put emphasis on research questions that are addressed by this new technology. We will learn the various tools that were developed at the computational archaeology laboratory.

Course/Module aims:

Studying and practicing 3-D technology in archaeology from all aspects

Learning outcomes - On successful completion of this module, students should be able to:

The student will gain the ability to use independently the new technology and the state of the art developments. The student will deal with research questions while using the tools developed at the computational archaeology laboratory

Attendance requirements(%):

100%

Teaching arrangement and method of instruction: Lessons and Lab work

Course/Module Content:

1. Introduction to 3-D Technology in Archaeology
2. The Archaeological Research in 3-D - A+B
3. Lab Work - Studying to scan in different resolutions.
4. Programs - A+B
5. Choosing personal projects and presenting projects from last year
6. Lab work
7. Presenting Personal Projects - A+B
8. Course summary

Required Reading:

- Grosman, L., Karasik, A., Smilansky, U. (2012). Archaeology in 3-D – computer based methodologies in Archaeological research. In: Qadmoniot 144. (In Hebrew).
- Grosman, L., Karasik, A., Harush, O., and Smilansky, U. (2014). Archaeology in

Three Dimensions: Computer Based Methods in Archaeological Research. In: *Journal of Eastern Mediterranean Archaeology and Heritage Studies* 2 (1): 48-64.

• Harush, O., Glauber, N., Zoran, A. & Grosman, L. 2019. "On Quantifying and Visualizing the Potter's Personal Style", *Journal of Archaeological Science* 108.

Additional Reading Material:

• Adan-Bayewitz, D., et al. (2009). Differentiation of ceramic chemical element composition and vessel morphology at a pottery production center in Roman Galilee. In: *Journal of Archaeological Science* 36(11):2517-2530.

• Gilboa, A., Karasik, A., Sharon, I., and Smilansky, U. (2004). Towards computerized typology and classification of ceramics. In: *Journal of Archaeological Science* (31) : 681-694.

• Gilboa, A., Tal, A., Shimsoni, I. and Kolomenkin, M. (2013). Computer-based, automatic recording and illustration of complex archaeological. In: *Journal of Archaeological Science* (40): 1329-1339.

• Grosman, L., Smikt, O., Smilansky, U. (2008). On the application of 3-D scanning technology for the documentation and typology of lithic artifacts. In: *Journal of Archaeological Science* 35: 3101-3110.

• Grosman, L., Goldsmith, Y., Smilansky, U. (2011). Morphological Analysis of Nahal Zihor Handaxes: A Chronological Perspective. In: *Paleoanthropology*: 203–215.

• Grosman, L., Sharon, G., Goldman-Neuman, T., Smikt, O., Smilansky, U. (2011). Studying post depositional damage on Acheulian bifaces using 3-D scanning. In: *Journal of Human Evolution* 60(4): 398-406.

• Grosman, L., Karasik, A., Smilansky, U. (2012). Archaeology in 3-D – computer based methodologies in Archaeological research. In: *Qadmoniot* 144. (In Hebrew).

• Grosman, L., Karasik, A., Harush, O., and Smilansky, U. (2014). Archaeology in Three Dimensions: Computer Based Methods in Archaeological Research. In: *Journal of Eastern Mediterranean Archaeology and Heritage Studies* 2 (1): 48-64.

• Harush, O. (2014). Regional, Chronological, Typological and Technological Aspects of 'Hippo' Jars from North Israel in the Iron Age Ila. Thesis submitted for the degree 'Master of Arts' (In Hebrew).

• Hershman, D. et al. (2014). Face to Face: The oldest Masks in the world. Israel Museum (In Hebrew).

• Karasik, A. (2010). Mathematical Methods and Computer Applications for the Analysis of Archaeological Artifacts, with focusing on Morphological Classification and Typology. Thesis submitted for the degree of 'Doctor of Philosophy'.

• Karasik, A., Smilansky, U., and Beit-Arieh, I. (2005). New typological analysis of holemouth jars from the early Bronze Age from Tel Arad and southern Sinai. In: *Tel-Aviv* (32): 20-31.

• Karasik A, Smilansky U (2008) 3D Scanning Technology as a Standard Archaeological Tool for Pottery Analysis: Practice and Theory. In: *Journal of Archaeological Science* (35):1148-1168.

• Karasik, A., Smilansky, U. (2011). Computerized morphological classification of ceramics. In: *Journal of Archaeological Science* 38(10):2644-2657.

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- Malinsky-Buller, A., Grosman, L., Marder, O. (2011). A case of techno-typological lithic variability & continuity in the late Lower Paleolithic. *Before Farming* 2011/1 article 3.
 - Richardson, E., Werman, M., Grosman, L., Smilansky, U. In Press. Computer analysis of 3d-scanned lithic artifacts. *Proceedings of Computer applications and quantitative methods in Archaeology CAA* (2012).
 - Saragusti, I., Karasik, A., Sharon, I., Smilansky, U. (2005). Quantitative Analysis of Shape Attributes Based on Contours and Section Profiles in Artifact Analysis. In: *Journal of Archaeological Science* 32(6):841-853. 1.
 - Sergi, O., Karasik, A., Gadot, Y., Lipschits, O. (2012). The Royal Judahite Storage Jar: A Computer-Generated Typology and Its Archaeological and Historical Implications. In: *Tel-Aviv* 39: 63-93.

Course/Module evaluation:

End of year written/oral examination 0 %
Presentation 20 %
Participation in Tutorials 10 %
Project work 0 %
Assignments 0 %
Reports 0 %
Research project 70 %
Quizzes 0 %
Other 0 %

Additional information:

The course structure and contents are not final. Changes are expected on both accounts.