1	**Course title**	Conservation and Restoration of Archaeological Metals
2	**Course number**	2632441
3	**Credit hours (theory, practical)**	3 (2, 1)
	Contact hours (theory, practical)	3 (2, 1)
4	**Prerequisites/corequisites**	--
5	**Program title**	B A degree in Cultural Resources Management and Conservation
6	**Program code**	20
7	**Awarding institution**	The University of Jordan
8	**School**	School of Archaeology and Tourism
9	**Department**	Cultural Resources Management
10	**Level of course**	4
11	**Year of study and semester (s)**	2018 – 2019 (2nd)
12	**Final Qualification**	BA
13	**Other department (s) involved in teaching the course**	--
14	**Language of Instruction**	Arabic and English
15	**Date of production/revision**	Production 04/09/2016 Revision 09/09/2018

16. Course Coordinator:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Dr Fatma Marii
Phone number: 25039
Email: F.Marii@ju.edu.jo

17. Other instructors:

Office numbers, office hours, phone numbers, and email addresses should be listed.
Dr Fatma Marii
Phone number: 25039
Email: F.Marii@ju.edu.jo

18. Course Description:

As stated in the approved study plan.
The course clarifies internal and external factors of the corrosion of copper, bronze, iron, and silver. In addition, the course includes the optimum methods of cleaning, stabilization, consolidation, covering, restoration and the best methods to display in museums or store different metal objects.

19. Course aims and outcomes:

A- Aims:

1) Understanding the archaeological metals and their alloys and the process of mining and smelting
2) Understanding the process of archaeological metals corrosion and the different between the base and noble metals (Iron, Lead, Copper, Silver, Gold).
3) Understanding the methods of documenting and examining the metal archaeological finds and assess their condition.
4) Understanding the treatment of archaeological metal objects whether for cleaning from the corrosion or consolidating them.
5) Understanding the stabilization of archaeological metal objects in suitable environment for their condition.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to:

1) Distinguish between the archaeological metals and the different techniques for their mining.
2) Distinguish between the tendency of different archaeological metals for corrosion and their environment.
3) Distinguish between the different methods for examining the archaeological metals and assess their condition.
4) Recognize the different methods for treating archaeological metal finds according to their condition.
5) Recognize the most suitable environment to preserve the archaeological metal finds.

20. Topic Outline and Schedule:

Topic	Week	Instructor	Achieved ILOs	Evaluation Methods	Reference
Major types of archaeological Metals (structures & properties). Factors of metals deterioration (noble, base metals) (dry & aqueous corrosion)	First	Dr Fatma Marii	Distinguishing between the different archaeological metals and the process of their deterioration in general	Discussion during lecture times	See References list
Conservation ethics and process of metal conservation (guidelines, investigative & spot cleaning, stabilization)	Second	Dr Fatma Marii	Introducing the basic principles for archaeological metals conservation	Discussion during lecture times	
Nature of metal artefacts (Fe, Pb, Cu, Ag & Au alloys)	Third	Dr Fatma Marii	Distinguish between the different metal alloys	Discussion during lecture times	

Nature of deteriorated metal materials	Fourth	Dr Fatma Marii	Distinguishing between the different types of metal corrosion	Discussion during lecture times	
Examination methods for archaeological metal artefacts	Fifth	Dr Fatma Marii	Distinguishing between the methods of metals examination	Discussion during lecture times	
Cleaning methods for archaeological metal artefacts	Sixth	Dr Fatma Marii	Distinguish between the methods of metals cleaning	Discussion during lecture times	
Restoration and reshaping methods of archaeological metal artefacts	Seventh	Dr Fatma Marii	Identifying the methods for re-shaping the corroded metals	Discussion during lecture times	
Active and passive stabilization for archaeological metal artefacts	Eighth	Dr Fatma Marii	Identifying the methods for active and passive stabilization	Discussion during lecture times	
History of metal conservation and How to write a treatment report	Ninth	Dr Fatma Marii	Distinguish between the different techniques for metal conservation	Discussion during lecture times	
Practical training for conservation modern corroded metals	Tenth	Dr Fatma Marii	Practicing the conservation and restoration of corroded metals artefacts	Training in the laboratory for practical conservation	
	Eleventh	Dr Fatma Marii		Training in the laboratory for practical conservation	
	Twelfth	Dr Fatma Marii		Training in the laboratory for practical conservation	
	Thirteenth	Dr Fatma Marii		Training in the laboratory for practical conservation	
	Fourteenth	Dr Fatma Marii		Training in the laboratory for practical conservation	
Discussing the resulted reports	Fifteenth	Dr Fatma Marii		Reports discussion	

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

1) Theoretical lectures with discussion during the lectures
2) Practical Training in the conservation and restoration laboratory
3) Students prepare reports for their practical training
4) Discussion one of the references concerning the metal conservation
5) Providing documentary films and field trips to museums concerning the metal conservation

22. Evaluation Methods and Course Requirements:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

1) Students to be committed to attend the most of the theoretical and practical lectures
2) Students to participate with the discussion during lectures and practical training
3) Midterm and final exams
4) Reports of practical training

23. Course Policies:

A- Attendance policies:
Students cannot be absent more than 15% of the lectures during the course

B- Absences from exams and handing in assignments on time:
Students will be failed if they are absent from exam without any accepted excuse. If assignments are not handed on time, then less marks will be given to the students.

C- Health and safety procedures:
Health and safety are explained clearly before any laboratory training

D- Honesty policy regarding cheating, plagiarism, misbehaviour:
All university regulations will be followed in these cases

E- Grading policy:
Midterm exam 20%, Participating in discussion 10%, Laboratory works and report 30%, Final exam 40%

F- Available university services that support achievement in the course:
University Library, The Archaeological Museum, The Heritage Museum

24. Required equipment: (Facilities, Tools, Labs, Training….)

Smart-Board with PC, conservation and restoration laboratory, e-learning facilities.

25. References:

Required book (s), assigned reading and audio-visuals:

-Watkinson, D. et al, 2013.
Corrosion and Conservation of Cultural Heritage Metallic Artefacts. Elsevier.
-Cronyn, J. 1990
The Elements of Archaeological Conservation, London: Routledge
-Sease, C. 1994
A Conservation Manual for the Field Archaeologist, Los Angeles: University of California, Institute of Archaeology.
-Bradley, S. (ed.) 1990
A Guide to the Storage, Exhibition and Handling of Antiquities, Ethnographia and Pictorial Art, London: British Museum.

Recommended books, materials, and media:

See above

26. Additional information:

Name of Course Coordinator: --Dr Fatma Marii-------Signature: ---------- Date: --17/02/2019-

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------