Faculty of Archaeology and Anthropology

Department of Conservation and Management of Cultural Resources

Study Plan for the Bachelor's Degree in Conservation and Management of Cultural Resources

2021

The Department of Conservation and Management of Cultural Resources offers a Bachelor's Degree in Conservation and Management of Cultural Resources after the completion of 132 credit hours as a single major program. The credit hours are distributed as follows:

1. University Requirements: (27 Credit Hours) as follows:

1.1. Obligatory Requirements: (15 Credit Hours) as follows:

Course No.	Course Title	Credit Hours
HUM 117	Entrepreneurship and Innovation	1
HUM 118	Leadership and social Responsibility	1
HUM 119	Life Skills	1
HUM 120	Communication and Connection Skills (English language)	3
HUM 121	Communication and Connection Skills (Arabic language)	3
PS 102	National Education	3
MILT 100A	Military Sciences and Citizenship	3
EL 99	English Language Skills (pre-requisite)	
AL 99	Arabic Language (pre-requisite)	
Comp 99	Computer Skills (pre-requisite)	

1.2. Elective Requirements: (12 Credit Hours) as follows:

To be taken from the service courses from outside the faculty of Archaeology and Anthropology, form the courses offered by the Department of Humanities Service Courses and the Department of Science Service Courses listed in the following table:

Humanities Service Courses		
Course No.	**Course Title**	**Credit Hours**
HUM 101	Basic of Media Communication	3
HUM 102	Citizenship and Allegiance	3
HUM 103	Islamic Intellect and Civilization	3
HUM 104	Arts and Behaviors	3

HUM 107	Human Rights	3
HUM 108	Thinking Skills	3
HUM 109	Islamic Systems	3
HUM 110	The Culture of Tourism and Hospitality	3
HUM 111	History of Jerusalem	3
HUM 112	Geography of Jordan	3
HUM 113	Islamic Educational Thinking	3
HUM 114	Good Governance and Integrity	3
HUM 115	Legal Education	3
HUM 122	Economy and Society	3
HUM 123	Performing Arts	3
Science Service Courses		
Course No.	**Course Title**	**Credit Hours**
SCI 101	Environment and Public Health	3
SCI 102	Information Technology and Society	3
SCI 103	Fitness for All	3
SCI 104	Effective Communication Skills	3
SCI 105	Renewable Energy	3
SCI 106	Administration and Community Development	3
SCI 107	Scientific Research	3
SCI 109	Digital Culture	3
SCI 110	Development and Environment	3
SCI 111	Principles of Epidemiology and Community Immunity	3

2. Faculty of Archaeology and Anthropology Course obligatory requirements (21 Credit Hours) as follows:

Course No.	**Course Title**	**Credit Hours**

ARCH 101	Introduction to Archaeology	3
ARCH 102	Origins of Civilization	3
CON 101	Introduction to Conservation of Cultural Resources	3
CON 121	Introduction to Museum Studies	3
ANTH 101	Introduction to Anthropology	3
ANTH 103	Introduction to Ethnoarchaeology	3
SCI 108	Computer Skills	3

3. Department course requirements: (84 Credit Hours):

The courses offered by the department cover a number of scientific fields within the cognitive areas of the conservation and management of cultural resources specialization. The tens digit in the course number indicates the scientific field as shown in the following table:

Scientific Field	Tens digit No.
General	0
Materials science and technology and methods of examination and evaluation	1
Management, documentation and legislations of heritage resources	2
Conservation of ceramic an glass materials	3
Conservation of metals	4
Conservation of stone and buildings	5
Conservation of organic materials	6
Special topics	7

All department courses are taught in English. They are distributed as follows:

3.1. Obligatory department courses (63 credit hours) as follows:

Course No.	Course Title	Weekly Hours		Pre-requisite(s)

		Theoretical	Practical	Credit Hours	
CON 102	Introduction to Management of Cultural Resources	3	-	3	-
CON 103	General Chemistry for Conservation Students	2	3	3	CON 101
CON 104	General Geology for Conservation Students	2	3	3	CON 101
CON 105	Conservation Science	3		3	CON 101
CON 211	Archaeological Materials Science and Technology	3	-	3	CON 101
CON 212	Conservation Materials	3	-	3	CON 103
CON 213	Deterioration of Archaeological Materials	3	-	3	CON 211
CON 221	Heritage Legislation and Policy	3	-	3	CON 101 CON 102
CON 222	Documentation of Archaeological Buildings and Artifacts	1	6	3	CON 101 CON 102
CON 223	Preventive Conservation	3	-	3	CON 105 CON 121
CON 331	Conservation of Archaeological Ceramics and Glass Materials	2	3	3	CON 212
CON 341	Conservation of Metals (Theoretical)	3	-	3	CON 212
CON 351	Architectural Conservation (Theoretical)	3	-	3	CON 104 CON 212
CON 352	Traditional Building Techniques and Typology	3	-	3	CON 104 CON 211 CON 222

CON 353	Archaeological Conservation in the Field	-	18	6	CON 222 CON 351 Student registers this course after completing 80 credit hours. Registering alternative courses are not allowed for this course.
CON 361	Conservation of Organic Materials	2	3	3	CON 212
CON 441	Conservation of Metals (practical)	-	9	3	CON 212 CON 341
CON 451	Architectural Conservation (Practical)	-	9	3	CON 351 CON 352
CON 452	Conservation of Mosaics	2	3	3	CON 212
CON 453	Laboratory and Field Evaluation of Conservation Materials	2	3	3	CON 212 CON 351

3.2. Elective department courses (21 credit hours), to be chosen from the following courses:

Course No.	Course Title	Weekly Hours		Credit Hours	Pre-requisite(s)
		Theoretical	Practical		
CON 224	Computer Applications in Archaeology	2	3	3	CON 101 CON 102 Sci 108

CON 311	Scientific Examination of Archaeological Materials	2	3	3	CON 211
CON 321	Information Systems in Archaeology	2	3	3	CON 101 CON 102 Sci 108
CON 322	Archaeological Collections Management	3	-	3	CON 121
CON 471	Special topics in Conservation	3	-	3	CON 211
CON 454	Conservation of Adobe and Fired Mud Brick Buildings	2	3	3	CON 212
CON 455	Conservation of Wall Paintings and Plasters	2	3	3	CON 212
CON 461	Conservation of Textile, Leather and Parchment	2	3	3	CON 361
CON 462	Conservation of Paper and Papyrus	2	3	3	CON 361
CON 463	Conservation of Bone and other Skeletal Materials	2	3	3	CON 361
ARCH 125	Introduction to Classical Archaeology	3	-	3	ARCH 101
ARCH 135	Islamic Art and Architecture	3	-	3	ARCH 101
ARCH 140	Introduction to the Application of Sciences in Archaeology	3	-	3	ARCH 101
ARCH 440	Dating Methods and Chronology	3	-	3	ARCH 140
ANTH 327	Folklore	3	-	3	ANTH 101

ANTH 366	Settlement and Domestication	3	-	3	ANTH 101

- Minor (21 credit hours) in conservation and management of cultural resources:

The requirements for minor specialization in conservation and management of cultural resources are distributed as follows:

a. Minor obligatory courses (15 credit hours) distributed as follows:

Course No.	Course Title	Weekly Hours		Credit Hours	Pre-requisite(s)
		Theoretical	Practical		
CON 101	Introduction to Conservation of Cultural Resources	3	-	3	
CON 103	General Chemistry for Conservation Students	2	3	3	CON 101
CON 212	Conservation Materials	3	-	3	CON 103
CON 221	Heritage Legislation and Policy	3	-	3	CON 101
CON 223	Preventive Conservation	3	-	3	CON 101

* Note: The course is CON 105 is added instead of CON 101 course if the student was from the Faculty of Archaeology and Anthropology

b. Minor elective courses (6 credit hours) to be chosen from the following courses:

Course No.	Course Title	Weekly Hours		Credit Hours	Pre-requisite(s)
		Theoretical	Practical		
CON 331	Conservation of Archaeological Ceramics and Glass Materials	2	3	3	CON 212

CON 341	Conservation of Metals (Theoretical)	3	-	3	CON 212
CON 351	Architectural Conservation (Theoretical)	3	-	3	CON 212
CON 361	Conservation of Organic Materials	2	3	3	CON 212
CON 452	Conservation of Mosaics	2	3	3	CON 212

A guide for courses registration for the students of the Department of Conservation and Management of Cultural Resources

First Year

First Semester		Second Semester	
Course No.	C.H.	Course No.	C.H.
CON 101	3	CON 103	3
CON 102	3	CON 104	3
CON 121	3	CON 105	3
Obligatory university course	3	Obligatory university course	3
Obligatory university course	3	Obligatory university course	3
Total	15	Total	15

Second Year

First Semester		Second Semester	
Course No.	C.H.	Course No.	C.H.
CON 211	3	CON 213	3
CON 212	3	CON 222	3
CON 221	3	CON 223	3
Obligatory university course	3	Elective university course	3
Obligatory faculty course	3	Obligatory faculty course	3
Obligatory faculty course	3	Obligatory faculty course	3

Total	18	Total	18

Third Year

First Semester		Second Semester	
Course No.	C.H.	Course No.	C.H.
CON 331	3	CON 351	3
CON 341	3	CON 352	3
CON 361	3	Elective university course	3
Elective university course	3	Elective department course	3
Elective department course	3	Elective department course	3
Total	15	Total	15

The student registers the course CON 353 Archaeological Conservation in the Field (6 credit hours) in the summer semester after the third year

Fourth Year

First Semester		Second Semester	
Course No.	C.H.	Course No.	C.H.
CON 441	3	CON 451	3
CON 452	3	CON 453	3
Elective university course	3	Elective university course	3
Elective department course	3	Elective department course	3
Elective department course	3	Elective department course	3
Total	15	Total	15

Course Description and Learning Outcomes

1. CON 101: Introduction to Conservation of Cultural Resources

Course Description:

The aim of this course is to provide students with the basic concepts and knowledge concerning archaeological and cultural heritage and its deterioration and conservation processes. It explores the definition of heritage and its importance; the deterioration processes and threats facing archaeological and cultural heritage; the principles and approaches of conservation of archaeological and cultural resources; the conservation processes; and the planning process for conservation of cultural resources.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize and appreciate the value of heritage and communicate the importance of its preservation and protection.

2. Recognize and classify the main threats and deterioration processes affecting cultural heritage.
3. Explain the key terms and concepts related to conservation of cultural heritage and differentiate between the varied conservation processes.
4. Identify and outline the steps for preparing a proper conservation plan for a cultural heritage site.
5. Communicate effectively by means of writing and presentation.

2. CON 102: Introduction to Management of Cultural Resources

Course Description:

This course aims to familiarize students with archaeological and cultural heritage management in its broader context, and its relationship to sustainable development. The course provides an introduction to the field of archaeological and cultural heritage management. It deals with the basic concepts, policies, processes and issues related to heritage management and its relationship to sustainable development. The topics covered in this course include the definitions of heritage and its role in sustainable development; threats to cultural heritage; values and stakeholders in archaeological and cultural heritage management; world heritage; the common approaches to the management of archaeological and cultural heritage; heritage management systems and their components; and management planning process for cultural heritage sites.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of heritage and its role in sustainable development.
2. Explain the broadening definitions of heritage and describe the context for cultural heritage management.
3. Explain the key terms and concepts related to management of cultural heritage, particularly world heritage.
4. Identify the various stakeholders involved in heritage management and assess their interests and values.
5. Describe the main approaches to heritage management.

6. Explain the concept of heritage management systems and identify their elements and component parts.
7. Identify and outline the steps for preparing a proper management plan for a cultural heritage site.
8. Develop critical thinking skills to discuss the suitability of management approaches and actions carried out at heritage sites and to evaluate their influences.
9. Communicate effectively by means of writing and presentation.

3. CON 103: General Chemistry for Conservation Students

Course Description:

This course aims to introduce students to the study of chemistry related to conservation. The course includes the following subjects: matter and measurements, atoms molecules and ions, periodic table of elements, stoichometry, aqueous reactions and solution stoichometry, basic concepts of chemical bonding, physical and colligative properties of solutions, solubility, methods of measuring the concentration of solutions, methods of solution preparation, organic chemistry and organic solvents, water purification, acidity and alkalinity, concept of oxidation and reduction. This course includes practical labs related to its subjects.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize basic concepts, principles and terms used in conservation chemistry.
2. Demonstrate safe lab-work practices (handling, use and disposal of chemicals and related materials).
3. Manage and design chemical experiments, and perform chemical calculations.
4. Distinguish between what is considered a dirt and what is considered a desirable patina in conservation science.
5. Decide what reagent(s) can be used to clean different types of dirt(s).

4. CON 104: General Geology for Conservation Students

Course Description:

This course aims to introduce students to the types of minerals, their physical characteristics, and the impact of these characteristics on their resistance to deterioration. The course includes defining the different types of rocks and their use as building materials in the Jordanian archaeological sites. This course addresses the types of weathering and its natural factors, geological time, methods of geological dating, and the geology of archeological sites in Jordan. The practical part of the course covers the identification of the main types of minerals and their physical characteristics, the identification of igneous, sedimentary and metamorphic rocks. It also includes a field visit to the nearby archaeological sites to learn about the effect of time and natural factors on them.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish between the main types of rocks.
2. Identify the minerals of the main rock types.
3. Determine the resistance of different types of rocks to deterioration.
4. Identify the most important geological phenomena that affected the archaeological sites in Jordan.

5. CON 105: Conservation Science

Course Description:

The aim of this course is to introduce students to the history, theories, and principles of conservation process and practice. It examines the historical development of conservation science and highlights the ethical principles and guidelines for conservation practice. The course explains the preventive and active conservation approaches and the various stages of conservation process.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the philosophy of conservation and explain the main principles and theories of conservation science.
2. Identify the major milestones in the development of conservation profession and charters of cultural heritage conservation.

3. Develop critical thinking skills to discuss fundamental ethical principles and issues in conservation.
4. Differentiate between active and preventive conservation approaches and identify the active and preventive actions that can be carried out to conserve cultural heritage.
5. Identify the main stages of conservation process and recognize the actions that should be carried out at each stage.
6. Communicate effectively by means of writing and presentation.

6. CON 121: Introduction to Museum Studies

Course Description:

This course aims to introduce the students to the importance of the museum as an educational entertainment institution. The course covers the history of the development of museums and their goals. It also covers the museum administration (human resources) and the role of each individual within the institution. The method of recording and storing archaeological objects, designing show cases, planning exhibitions, and lighting systems are also included in the course. The students will also be taught about the proper museum environment to preserve the archeological artifacts. A practical training on the registration and protection of archaeological artifacts, storage and display techniques, and collections management will be carried out at the Museum of Jordanian Heritage.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of the museum role in education, entertainment, and preservation of archaeological artifacts.
2. Recognize the most popular international, Arabic and Jordanian museums.
3. Record archaeological artifacts in the museum records.
4. Recognize presentation techniques of museum collections.
5. Describe museum objects and their management process.
6. Evaluate the museum environment controlling systems.
7. Recognize the importance of museum display in the preservation of museum artifacts.

8. Interpret the importance of temporary exhibitions in the museum.
9. Submit and present reports on the learnt topics on museum studies.

7. CON 211: Archaeological Materials Science and Technology

Course Description:

This course aims to provide students with the theoretical backgrounds about the nature of archaeological organic and inorganic materials, their chemical and physical properties, and their manufacturing techniques. The course includes a description of archaeological materials, both organic such as wood, parchment, textile, paper and paints, and inorganic such as minerals and metals, stone, pottery, glass, mud brick, and mortar and plastering materials. The course also deals with material structure, atomic structure, molecular structure, and explains the theories and methods used in the extraction of elements from their ores, and demonstrate the types of materials, tools and techniques that were used in the manufacture of artifacts in antiquities.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Classify archaeological materials and explain their characteristics.
2. Discuss the technical skills of ancient manufacturing processes of archaeological artifacts.
3. Discuss the characteristics of archaeological materials and their transformations.
4. Explain structural defects and their effect on materials characteristics.
5. Explain the mechanical, chemical, and optical properties of archaeological materials.

8. CON 212: Conservation Materials

Course Description:

This course aims to introduce students to the nature of the various types of materials used in the conservation of archaeological buildings and materials. The course focuses on studying the chemical composition and physical and chemical characteristics of conservation materials. The course includes the study of the relationship between chemical structure and properties and use of materials, such as solvents, detergents, adhesives,

consolidants, stabilizers, preservatives and others. The course includes practical training in the laboratory.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish the organic and inorganic conservation materials.
2. Recognize the physical, chemical and optical properties of conservation materials.
3. Explain deterioration processes of conservation materials and their causes.
4. Explain examination methods for the identification of unknown conservation materials.
5. Explain the methods of the removing previous conservation material used on archaeological artifacts (reversible treatment).

9. CON 213: Deterioration of Archaeological Materials

Course Description:

This course aims to introduce students to the causes and mechanisms of the deterioration and degradation of various types of organic and inorganic archaeological materials. The deterioration process of archaeological objects in burial environments, the immediate deterioration caused by excavation and the long term deterioration in museum and storage will be discussed in this course.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the deterioration forms of various types of archaeological materials.
2. Explain the relationship between the chemical composition and physical properties of the archaeological materials and their deterioration.
3. Explain the effect of burial environment on the deterioration of archaeological materials.
4. Explain the effect of storage environmental conditions on the deterioration of archaeological materials.
5. Develop critical thinking and communication skills, and express that in writing and presenting assignments related to the topics of the course.

10. CON 221: Heritage Legislation and Policy

Course Description:

This course aims to introduce students to the main legislations and policies for the protection of cultural heritage. The course includes topics such as the illicit excavations and trade in cultural objects, the restitution of stolen or looted cultural materials, and the protection of cultural property in the event of armed conflict. The course examines the Jordanian antiquities law and the legal legislations adopted by international organizations such as UNESCO, the United Nations, ICCROM and ICOMOS.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Define the terms related to cultural heritage legislations.
2. Recognize the role of different national and international organizations involved in protecting cultural heritage and their legislations.
3. Employ legislation, regulations and planning instruments and policies for the registration, inventory and documentation of archaeological materials.
4. Employ the national and international regulations for the protection of cultural heritage.
5. Distinguish between legal and illegal methods in dealing with archaeological materials, and recognize the role of the national and international legislations. in preventing any loss or destruction of archaeological materials
6. Recognize the methods of dealing with cultural heritage in crisis situations.
7. Adhere to the conservation methods in accordance with the legal framework in Jordan.

11. CON 222: Documentation of Archaeological Buildings and Artifacts

Course Description:

This course aims to introduce students to the importance of documentation as a key tool in conservation, and train them on the use of documentation techniques to monitor the status of the built environment in all circumstances. The course includes providing students with the knowledge required to document the archaeological artifacts and historic buildings, through the practical training in the studio on the technical free hand sketches as a primary

tool for documentation, and manual architectural drawing, and archiving these drawings through the use of two-dimensional and three-dimensional AutoCAD program. The student will also be trained on the professional imaging processing and their uses in the field of documentation, this include imaging environment, imaging method for the purposes of documentation, the use of image processing software, three-dimensional modeling of images, and drawing methods from images, and documentation of deterioration forms. The course includes theoretical lectures, practical training in the studio, and field applications.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of documentation in the field of conservation of cultural heritage.
2. Distinguish different types of lines and the skill of their drawing.
3. Draw archaeological artifacts, with scale, in different techniques, and understand the drawn figures.
4. Draw different architectural elevations with scale, and understand the drawn plans.
5. Use computer to draw archaeological artifacts and architectural elements.
6. Use imaging tools and related software.
7. Design deterioration map for the assigned work.
8. Work with a positive team spirit and use scientific terms in English and Arabic.

12. CON 223: Preventive Conservation

Course Description:

This course aims to teach students the methods used to identify the possible risks to collections, determine when objects are indeed at risk, and recognize and control major risks such as active corrosion on metals, mold and other pests, and the human element. Visual inspections and monitoring relative humidity (RH) will be discussed, along with storage environments for archaeological objects, and package and support materials for collections. Conditions unique to archaeology materials, such as contamination from burial environments and potentially hazardous degradation of materials in storage, will be covered. The preventive conservation at archaeological site through controlling human and natural agents of deterioration will also be covered.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Discuss the environmental risks on archaeological objects in storage and display.
2. Identify various risk signs on museum collections.
3. Monitor, evaluate and adjust environmental conditions (temperature, relative humidity, light and gaseous pollutants) in the museum and its storage and work-processing areas.
4. Implement integrated pest management program in the museum and its storage and work-processing areas.
5. Apply safe handling and transport practices on archaeological objects.
6. Explain preventive conservation measures in the archaeological sites.

13. CON 224: Computer Applications in Archaeology

Course Description:

This course aims to develop student skills of applying the recent computer applications in archaeology. The course focuses on emerging computer science methods and technologies useful for digitally recording, preserving and reconstructing archaeological artifacts, and presenting archaeological site interpretations. The course will explore the use of information technology for archiving archaeological sites and artifacts through theoretical and practical experience. Topics to be discussed in the course are Internet uses and its applications, digital archiving, database management, 3D modeling, CAD software for automation of topographic maps and graphic display for building and objects, and reconstruction and laser scanning techniques.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Explore and investigate the recent developments in instrumentations and software that are vital in archaeology.
2. Employ and develop available computer software in the applications of conservation and management archaeological sites and cultural materials.
3. Gather 3D data from the field and build accurate models of archaeological sites and artifacts.

4. Employ digital archiving and database management for archaeological sites and museum collection management.

14. CON 311: Scientific Examination of Archaeological Materials

Course Description:

This course aims to introduce students to a number of scientific analytical techniques and methods which are used in the investigation of archaeological materials. It includes the study of different methods and techniques used for the analysis of archaeological materials in the laboratory in order to obtain information concerning: its chemical composition, raw materials used in its fabrication and defining its physical and chemical properties. The course covers the chemical methods of analysis, microscopic methods, physical methods and how these methods are employed in the examination of all types archaeological materials. The course includes practical applications in the laboratory.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Select the suitable analytical technique to examine archaeological material under research and answer research question.
2. Recognize the advantages and limitations of various analytical techniques
3. Prepare analysis samples according to the procedures required for various analytical techniques.
4. Carry out statistical analysis of results.
5. Write the archaeological report of analysis using scientific methods.

15. CON321: Information Systems in Archaeology

Course Description:

This course aims to provide students with a theoretical grounding and practical experience in the applications of information systems, particularly GIS, in archaeology. It introduces students to a range of current information systems used for collecting, archiving, managing, analyzing, visualizing and presenting archaeological information. The course focuses on the application of Geographic Information Systems (GIS) in archaeology and cultural

resources management. It provides an overview of the basic principles of these information systems and their applications for archaeological research. The topics covered in this course may include a review of the theory and development of information systems, particularly GIS, and their role in archaeology, acquisition and management of archaeological data, the concepts and issues associated with the use of information systems, fundamental analytical operations, spatial analysis, and modeling of archaeological data.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Identify and explain the ways information systems, particularly GIS, can be applied in archaeology and cultural resource management.
2. Explain the key concepts related to information systems and their fundamental operations.
3. Identify and utilize sources of archaeological data and distinguish between different data models.
4. Create, manipulate, visualize and query archaeological data.
5. Digitize vector data, georeference maps, and construct digital elevation models (DEMs).
6. Create slope, aspects, and other derivative surfaces from DEMs.
7. Construct effective map layouts.
8. Conduct a GIS project and report and present the results.

16. CON 322: Archaeological Collections Management

Course Description:

This course aims to introduce students to the importance of archaeological collections, and the management principles and practices for these collections. The course discusses the framework and ethics of archaeological and museum collections management, roles of the specialists in this field, and the procedure for the acquisition of museum artifacts, their documentation, classification, storage, and proper handling. The course illustrates the procedure for requesting access to the museum's collections, and borrowing objects for research purposes. The course reviews the security, emergency planning and disaster planning procedures.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of archaeological collections.
2. Explain the practices and ethics of archaeological collections management.
3. Explain the roles of various staff members in this field.
4. Analyze critically and communicate effectively, and express that through writing and presenting assignments related to the course.

17. CON 331: Conservation of Archaeological Ceramics and Glass Materials

Course Description:

This course aims to introduce students to the methods used in the conservation of ceramics and glass artifacts. The course discusses the methods used in the conservation of ceramics and glass artifacts; such as examination and documentation, cleaning, surface coatings, adhering, consolidation, gap-filling/replacements, and restoration. The course includes practical training in the laboratory on the conservation methods of various types of ceramics and glass artifacts.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish the types of raw materials used in ceramics and glass production.
2. Apply various mechanical and chemical cleaning methods of ceramics and glass.
3. Restore ceramics and glass artifacts using appropriate methods and materials.
4. Document the conservation process of ceramics and glass artifacts.
5. Recognize the values of the conserved archaeological ceramics and glass artifacts.

18. CON 341: Conservation of Metals (Theoretical)

Course Description:

This course aims to introduce students to the structure and properties of copper, iron, lead, tin, silver and gold, their smelting and refining techniques, alloys, fabrication techniques and corrosion causes and mechanisms. This course focuses on discussing the methods and techniques adopted for the conservation and stabilization of archaeological objects made

of the above mentioned metals and their alloys that have been excavated from different burial environments.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the aspects of production and function of objects made of copper, iron, lead, tin, silver, gold and their alloys.
2. Discuss the corrosion processes of archaeological metals and alloys, and identify their corrosion products in various environments.
3. Discuss various conservation alternatives for the archaeological metal based objects, and identify the suitable treatment or measure according to the state of preservation of the object.
4. Develop critical thinking and communication skills, and express that in writing and presenting assignments related to the topics of the course.

19. CON 351: Architectural Conservation (Theoretical)

Course Description:

This course aim to introduce students to the chemical and structural composition, and chemical and physical characteristics of the materials used in archaeological and historical buildings, such as various types of stone, mortar, internal and external plastering materials, roofing and decoration materials. The course deals with the agents of deterioration and weathering of the materials used in architecture, as well as methods of examination and diagnosis of the deterioration phenomena, and methods of treatment such as cleaning methods, restoration, replacement, consolidation, and treating structural problems.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish different types of stones used in archaeological and historical buildings.
2. Recognize the locations of geological sources of building stones in Jordan.
3. Determine the types of mortar and plastering materials and methods of their manufacture.
4. Recognize the internal and external factors that cause deterioration to building materials.

5. Recognize deterioration forms of building materials and methods of their examination.
6. Determine methods of treatment for the deteriorated building materials.

20. CON 352: Traditional Building Techniques

Course Description:

This course aims to introduce students to the history of human settlement and architectural heritage styles in Jordan and the surrounding region. The course includes an introduction to the history of architecture and human settlement in Jordan, the architectural styles that prevailed Jordan and the Levant in general, and the influences between the Levant and the Jordanian cities and villages. These influences will be discussed through comparing Jordanian traditional architecture and their equivalents in the countries around Jordan. The Ottoman influence on local architecture will also be discussed. Students will come to understand the changes that took place on the local architecture due to the socioeconomic and political factors that caused this change, and the role of stability after the foundation of the Transjordan Emirate in the production of a local architecture compatible with the environment and the prevailing culture at that time.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish various heritage buildings models and styles.
2. Distinguish walls building techniques in various heritage buildings.
3. Distinguish the techniques used in the preparation of building materials and their sources, especially heritage sites quarries and stone cutting and dressing techniques.
4. Distinguish the kinds of building openings and the reasons for their use and their relationship to the different civilizations
5. Distinguish the various roofing methods and the use of wooden frameworks in their construction.

21. CON 353: Archaeological Conservation in the Field

Course Description:

This course aims to introduce students to the proper lifting methods for the excavated artifacts and the conservation of discovered architectural ruins and their documentation. The course discusses the factors affecting archaeological materials in various burial environments, the factors affecting them immediately upon excavation, and the methods and materials used in the field for their preservation. The course includes a practical training on the methods of documenting and preserving the newly excavated archaeological materials, lifting methods and materials, on site conservation, and transporting the artifact to the laboratory. The course also includes a practical training on the methods of protection and conservation of architectural ruins, sampling techniques for laboratory analysis, cleaning methods, and mortar preparation and application in repointing and gap filling.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the different archaeological burial environments.
2. Distinguish various types of excavated archaeological materials, and the effect of the environment on them.
3. Apply and document the first aid methods for the preservation documentation of newly excavated archaeological materials.
4. Recognize the methods for the preparation of materials used in lifting the newly discovered archaeological materials
5. Realize the methods of conserving architectural ruins, the preparation of conservation materials, and their application techniques.

22. CON 361: Conservation of Organic Materials

Course Description:

This course aims to introduce students to the methods of maintenance and restoration of the organic material of plant origin, such as wood, manuscripts, icons and oil painting; and organic materials of animal origin, such as bones and skins. It involves the identification of the factors of deterioration of organic materials and the resulting deterioration forms. It focuses on the study of micro-biological damage, insects and methods of prevention. In addition, the course deals with the methods of testing, analysis and dating of organic materials, the methods of their treatment, and the most important materials and techniques

that are used for their restoration. The course will also include practical application in the laboratory in which students are trained on the drawing methods on wooden panels such as icons and paintings; on the methods of cleaning and completing missing parts; and on the methods of their preservation.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of preserving organic materials.
2. Identify the causes of damage of organic materials and methods of their preservation.
3. Recognize the aspects of insect and microbiological damage and how to prevent against this damage.
4. Distinguish between some types of insects that affect the organic materials.
5. Master the mechanical and chemical cleaning methods of organic materials.
6. Use documentation and restoration tools.
7. Use strengthening materials for organic materials.
8. Distinguish appropriate materials for restoration.
9. Apply proper environmental conditions for organic materials.
10. Communicate effectively by means of writing and presentation.

23. CON 441: Conservation of Metals (practical)

Course Description:

This course focuses on practical training for the students on the methods and techniques adopted for the conservation and stabilization of archaeological objects made of copper, iron, lead, tin, silver and gold, and their alloys that have been excavated from different burial environments. The students will be trained on various examination techniques of archaeological metal based objects. They will practice mechanical and chemical cleaning methods, conduct chemical and electrochemical stabilization and restoration methods, apply protective coatings, and create the proper environmental conditions for storage and display of these metals and their alloys.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Examine archaeological metal based objects and identify their composition and corrosion products.
2. Explain the examination results, and prepare a condition report for the metal based object.
3. Discuss various conservation alternatives of archaeological metal based objects, and apply the suitable conservation measures and treatments for the corroded archaeological metal based objects according to their condition.
4. Critically evaluate the results of the conservation process, submit a written conservation report, and deliver an oral presentation for the work done.
5. Work to deadlines, work independently, and work within a team effectively.

24. CON 451: Architectural Conservation (Practical)

Course Description:

This course aims to train students on the practical techniques and methods used in the conservation of historical and archaeological architecture. This course includes applying the theoretical knowledge acquired by students in architectural conservation (theoretical) course application in the laboratory and the field. These applications include the collection of information and documentation techniques, the treatment of structural and architectural problems such as cracks, the treatment of bulging and bowing, swellings, moisture, microorganisms, and the methods to remove salts and clean architectural facades and repoint and strengthen the stone.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Prepare a work plan for the restoration of archaeological buildings
2. Examine buildings and prepare a condition report.
3. Design and prepare a suitable mortar for the use in restoration of archaeological buildings.
4. Treat cracks in buildings and choose the materials necessary to do so.
5. Prepare poultices used in the cleaning processes.
6. Embrace teamwork spirit.
7. Communicate effectively in writing and presentation.

25. CON 452: Conservation of Mosaics

Course Description:

This course aims to provide students with the scientific knowledge and practical skills related to the conservation of mosaics. The course includes a comprehensive coverage about the history of the evolution of mosaics production since its inception until now. The course reviews the old methods, techniques and materials used to create the ancient mosaics. This course also deals with the human and natural factors that lead to the deterioration of mosaics. The course includes a practical training on the methods and techniques used in the conservation of mosaic cultural heritage.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of mosaics and contribute to increase the local community awareness on the need to preserve and protect this important cultural heritage.
2. Identify the factors and various aspects of the deterioration of mosaics.
3. Apply conservation processes on archaeological mosaics using the newest methods, techniques and materials in the field.
4. Prepare mosaic models using the ancient methods and materials.

26. CON 453: Laboratory and Field Evaluation of Conservation Materials

Course Description:

This course aims to introduce students to the laboratory and field testing and evaluation methods used to determine the effectiveness of conservation materials. The course includes a discussion of the requirements of the materials that can be used to consolidate various types of stone used in heritage and archaeological structures and buildings, and those that must be met in mortar and stone isolation materials. The course includes a practical training on the laboratory and field testing and evaluation methods that should be carried out to ensure the suitability of these materials for the conservation of these structures and buildings.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the requirements of the stone conservation materials.
2. Explain the steps of the experiments used to determine the effectiveness of conservation materials.
3. Evaluate the appropriateness and effectiveness of the conservation materials and the treatments that are applied on stone based on the results of the laboratory and field tests.

27. CON 454: Conservation of Adobe and Fired Mud Brick Buildings

Course Description:

This course aims to introduce students to the traditional and scientific methods in the conservation of adobe and fired mud brick buildings. The course includes a historical background about the manufacturing methods of different brick types and the materials used in their production. The course focuses on brick buildings in Jordan; it deals with the deterioration of these buildings, its causes and mechanism. The course also deals with the examination methods of these buildings, the preparation of a deterioration map for each building, and the conservation and rehabilitation of this type of buildings. The course includes practical training in the laboratory and field visits to adobe and fired mud brick buildings, and brick factories.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Master the skill of sun dried adobe preparation.
2. Distinguish between different deterioration forms of adobe and fired mud brick buildings.
3. Document the deterioration forms adobe and fired mud brick buildings.
4. Master the skill of treating adobe and fired mud brick buildings.
5. Prepare a conservation plan that includes all processes learnt in the course.

28. CON 455: Conservation of Wall Paintings and Plasters

Course Description:

This course aims to introduce students to the methods of conservation of wall paintings and plastering. The course includes the study of the technique used in the execution of wall paintings and plasters that are found in ancient tombs and archaeological buildings. The course deals with the study of the deterioration that affects the paintings and plaster, and the conservation methods that should be used. The course includes a practical training in the laboratory and the field.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of preserving wall paintings.
2. Explain the impact of the deterioration factors on wall paintings.
3. Master the mechanical and chemical cleaning methods of wall paintings.
4. Use consolidants to strengthen fragile wall paintings.
5. Master the preparation of colored materials and mixing them to obain the required color to be applied in the restoration process.
6. Use conservation tools, and drawing and painting tools
7. Apply dismantling and transfer processes of wall paintings at risk.
8. Evaluate appropriate materials for the restoration of wall paintings.
9. Explain displaying methods of wall paintings, and the appropriate environment for their preservation.
10. Present oral and written reports on their work.

29. CON 561: Conservation of Textile, Leather and Parchment

Course Description:

This course aims to introduce students to the conservation methods of ancient textiles, leather and parchment. The course includes the study of ancient textile technology (linen-cotton-silk-wool) and leather and parchment, the most important ancient dying materials, deterioration causes and forms, examination and analysis methods, and conservation materials and techniques. The course includes practical training in the laboratory.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of conserving the archaeological textiles, leather and parchment.
2. Recognize the deterioration causes and forms of textile, leather and parchment, and their prevention methods.
3. Identify and apply the mechanical and chemical cleaning methods of textiles, leather and parchment.
4. Master the use of conservation tools and knitting tools.
5. Demonstrate the consolidation methods of the weak and fragile textile and leather.
6. Demonstrate the skill of manual knitting of gaps in the textile.
7. Recognize the appropriate materials for restoration.
8. Demonstrate displaying techniques of textiles and leather in the museum, and identify the suitable environment for their preservation.
9. Present oral and written reports on their work.

30. CON 462: Conservation of Paper and Papyrus

Course Description:

This course aims to introduce students to the conservation processes of the old paper and papyrus. The course discusses the concept of ancient manuscripts and books, their archaeological and historical importance, and their manufacturing methods. It also discusses the agents of their deterioration, the conservation methods, and storage and display in the museum methods. The course includes practical training in the laboratory.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of ancient manuscripts.
2. Recognize the deterioration forms of ancient manuscripts, and determine their causes and the methods of their prevention.
3. Identify and apply the mechanical and chemical cleaning methods of manuscripts.
4. Demonstrate the consolidation methods of the weak and fragile manuscripts.
5. Master the use of conservation tools and drawing and painting tools.
6. Explain the manual and automatic filling methods for manuscript holes.
7. Explain the environmental controlling methods for manuscripts in the museum.

8. Present oral and written reports on their work.

31. CON 463: Conservation of Bone and other Skeletal Materials

Course Description:

This course aims to introduce students to the conservation methods of archaeological bones and similar materials. The course discusses the techniques and methods used in the examination, cleaning, and conservation of archaeological material made of bone, ivory, and horns. The course includes practical training in the laboratory.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of archaeological bones.
2. Identify the causes of bone deterioration and methods of their prevention.
3. Master the cleaning methods of archaeological bone and similar materials
4. Demonstrate the consolidation methods of the weak and fragile bone.
5. Master the use of conservation tools and drilling and inlaying tools.
6. Explains the conservation methods of artifacts inlaid with bone, ivory, and shells
7. Recognize the appropriate materials for restoration
8. Evaluate the data received from the museum environment monitoring devices.
9. Present oral and written reports on their work.

32. CON 471: Special topics in Conservation

To be determined by the instructor.

33. Arch 101: Introduction to Archaeology

Course Description:

This course provides an introduction to the theory, methods and aims of archaeology, in addition to the relation of archaeology to history, art, science and other disciplines. In this course students examine archaeology and professional ethics; archaeology as public interest; and legal organizations of archaeology.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the importance of archaeology.
2. Express the knowledge of how archaeology was developed and state its goals.
3. Recognize the theoretical and practical methods of archaeological excavations.
4. Explain the relationship between archaeology and other related fields.

34. Arch 102: Origins of Civilization

Course Description:

This course presents a comparison of origins and institutions of civilizations in the old and new worlds, including the first state-organized societies of Mesopotamia, Egypt, Levant, the Indus Valley, China, the Aegean, Mesoamerica, and Peru.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Name the main civilizations that existed in the ancient world
2. Explain the main features of the civilizations in Mesopotamia, Egypt, Levant, China, India, Greece and America.

35. Arch 125: Introduction to Classical Archaeology

Course Description:

This course discusses the historical, political, social, and economical aspects of the Greek and Roman civilizations. The course emphasizes on the remains of these civilizations in both western and Eastern world and on their developments and spread in the Mediterranean region.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Realize the historical, political, social, and economical aspects of the Greek and Roman civilizations.
2. Explain the remains of these civilizations in both Western and Eastern world
3. Distinguish the geographical distribution of the classical civilizations archaeological sites.

36. Arch135: Islamic Art and Architecture

Course Description:

This course covers the origins and evolution of Islamic art and architecture, its characteristics and advantages, the study of models of architectural elements, domes, minarets, minbars, and Islamic motifs such as oil paintings, mosaics, manuscripts and Islamic schools of painting, with an emphasis on religious architecture, civil and military, mosques, palaces and theories of Orientalists in the fields of Islamic architecture and arts.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Distinguish between the types of Islamic monuments and origins and functions.
2. Analyze the architectural and artistic evolution, and uses of structural and functional materials for the implementation of these buildings and applied arts.
3. Distinguish architectural and artistic development, in particular the art of painting, through the Islamic periods

37. ARCH 140: Introduction to the Application of Sciences in Archaeology

Course Description:

This course presents the relationship between archaeology and applied sciences and overview of the application of physical, chemical, geological and biological theories and methods in locating, dating and studying of archaeological sites and remains

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Define the relationship between the natural sciences and Archaeology.
2. State and distinguish the different streams of applied sciences in archaeology.
3. Give a brief about the nature of different archaeological materials.
4. Name some absolute dating methods.

38. Arch 440: Dating Methods and Chronology

Course Description:

This course covers a variety of techniques used by archaeologists for dating archaeological sites and materials. The general principles and applications of relative dating such as stratigraphy and typological sequences and absolute dating techniques based on radioactivity

such as radiocarbon, thermo luminescence, uranium series, etc. are covered in this course.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Identify the main dating methods of archaeological sites and materials.
2. Differentiate between relative and absolute dating methods.
3. Calculate the age of archaeological materials using the appropriate dating law.
4. Practice the construction of chronological sequences of archaeological sites and correlate between them.
5. Determine the appropriate dating technique for the archaeological materials.

39. ANTH 101: Introduction to Anthropology

Course Description:

This course aims to introduce students to the field of anthropology in both of its main divisions: Socio\cultural anthropology, which discusses the social aspects of human societies such as social structure, customs and traditional beliefs and practices of social systems. The other division of anthropology is biological, which discusses the biological aspects of human societies such as human variation, adaptation, evolution and importance of human skeletal studies.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Define the concept of culture and its components.
2. Recognize the role of ecological, economic and historical factors that affect culture and its transformation.
3. Recognize the exclusive possession of the human to culture, and the organic and physical distinction of human from other creatures.
4. Identify the field of anthropology and its distinguished methodologies.

40. ANTH 103: Introduction to Ethnoarchaeology

Course Description:

This course aims to introduce students to the close relationship that links between

archeology and anthropology in general, and ethnography in particular, in an attempt to demonstrate how the ethnographic description can be used to understand the past in a more genuine way, which provides the archaeologists a better understanding of the behavior and culture of the past populations. The course also concentrates on the analogy between past and present, for the purpose of determining the differences and similarities between the source and the subject.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Define ethnoarchaeology and its areas of study.
2. Recognize the use of Ethnoarchaeological description to understand the past in a more genuine way.
3. Recognize the use of ethnoarchaeology by archaeologists to give actual explanations to ancient human behaviour and culture
4. Practice measuring the relationship between past and present for the purpose of determining the differences and similarities between the source and the subject.

41. ANTH 327: Folklore

Course Description:

This course aims to increase students' awareness of cultural heritage and the cultural, social, political and ecological dynamics that constitute the folklore among human societies. This course also seeks to provide distinct definitions of the concept of heritage, and to present visible and invisible cultural elements, which are produced and reproduced collectively by different cultures. It also reviews the progression of discussions about the concept of heritage and folklore and the various implications of the concepts since the beginning of its application in the nineteenth century to the present. The course also focuses on the mutual influence between heritage components and the rest of cultural elements such as language, politics and religion, geography, ecology and history.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Develop an anthropological definition of folklore.

2. Distinguish between the material and immaterial forms of folklore.
3. Recognize the role of ecological, religious, linguistic, and political elements, which contributed to the creation of folklore phenomenon for human societies.
4. Recognize the various uses and applications of folklore.

42. ANTH 366: Settlement and Domestication

Course Description:

This course aims to study the most important changes in the lives of human beings as a result of the shift from nomadic hunting and gathering to settled agriculture and animal husbandry. The course focuses on introducing students to the oldest human settlement areas in different regions of the world and the stages of its development. It also introduces the student to the types of plants and animals that have been domesticated, and link this process with cultural evolution of man in different historical eras.

Course Learning Outcomes:

On successful completion of this course, students should be able to:

1. Recognize the most important changes in the lives of human beings as a result of the shift from nomadic hunting and gathering to settled agriculture and animal husbandry.
2. Recognize the oldest places of human settlement in various regions of the world and the stages of its development.
3. Identify the different types of plants and animals that have been domesticated and link this process with cultural evolution of man in different historical eras.