SENATE COMMITTEE ON CURRICULAR AFFAIRS

COURSE SUBMISSION AND CONSULTATION FORM

Principal Faculty Member(s) Proposing Course

<table>
<thead>
<tr>
<th>Name</th>
<th>User ID</th>
<th>College</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heather McCune Bruhn</td>
<td>hcm1</td>
<td>Arts and Architecture (AA)</td>
<td>Not Available</td>
</tr>
<tr>
<td>Maureen Feineman</td>
<td>mdf12</td>
<td>Earth and Mineral Sciences (EM)</td>
<td>Not Available</td>
</tr>
</tbody>
</table>

Academic Home: Arts and Architecture (AA)

Type of Proposal: [x] Add  [ ] Change  [ ] Drop

Course Designation

(ARTH 107N) Rocks, Minerals, and the History of Art (N)

Course Information

Cross-Listed Courses:

GEOSC 107N(EM)

Prerequisites:

Corequisites:

Concurrents:

Recommended Preparations:

Abbreviated Title: Rocks and Art

Discipline: General Education

Course Listing: Inter-Domain

Special categories for Undergraduate (001-499) courses

Foundations

[ ] Writing/Speaking (GWS)

[ ] Quantification (GQ)

Knowledge Domains

[ ] Health & Wellness (GHW)

[ ] Natural Sciences (GN)

[ ] Arts (GA)

[ ] Humanities (GH)

[ ] Social and Behavioral Sciences (GS)

Additional Designations

[ ] Bachelor of Arts

[ ] International Cultures (IL)

[ ] United States Cultures (US)

[ ] Honors Course

[ ] Common course number - x94, x95, x96, x97, x99

[ ] Writing Across the Curriculum

First-Year Engagement Program

[ ] First-Year Seminar
Course Outline

A brief outline or overview of the course content:
1) Introduction: What is a mineral? What is a rock? How do we approach and evaluate works of art?
2) Ochre: physical and chemical properties; occurrence in nature; mining and processing; the first art: Paleolithic cave paintings; Ochre as a pigment in other works of art
3) Lapis lazuli: physical and chemical properties; occurrence in nature; mining and processing; use in the Ancient world for sculpture; use in the Middle Ages and Renaissance as a pigment; value/expense; natural and synthetic ultramarine
4) Quartz (Rock Crystal): physical and chemical properties; occurrence in nature; mining and processing; observation and inquiry (Pliny the Elder, crystal skulls); symbolism (notions of purity, light, and magnification); Rock crystal sculptures and vessels in the Ancient and Medieval world
5) Garnet: physical and chemical properties; occurrence in nature; mining and processing; garnet cloisonné; Roman; Migration; garnet as a symbol of Christ’s blood
6) Igneous Rocks (Basalt, Diorite, & Porphyry): physical and chemical properties; rock textures; occurrence in nature; mining and processing; Imperial Porphyry; Egypt & the Porphyry Road; Hagia Sophia; Statues of Gudea; Code of Hammurabi; symbolism of hard rock; concepts of permanence; the importance of purple in the Roman Empire and beyond
7) Alabaster: physical and chemical properties; occurrence in nature; mining and processing; Egyptian (calcite) vs. European (gypsum) alabaster; ease of workmanship; translucence and color; use in Egypt, Greece, Middle East, Europe; English religious alabaster industry (15th century)
8) Marble: physical and chemical properties; occurrence in nature; mining and processing; tools for working marble; susceptibility to acid; Marble in Greece and Rome; symbolism of Roman marble imports within the Empire; working methods of artists (e.g. Donatello, Bemini and Rodin)

A listing of the major topics to be covered with an approximate length of time allotted for their discussion:
1) Introduction – 1 week
2) Ochre – 1 week Geoscience, 1 week Art History
3) Lapis lazuli – 1 week Geoscience, 1 week Art History
4) Quartz (Rock Crystal) – 1 week Geoscience, 1 week Art History
5) Garnet – 1 week Geoscience, 1 week Art History
6) Igneous rocks (basalt, diorite, & porphyry) – 1 week Geoscience, 1 week Art History
7) alabaster – 1 week Geoscience, 1 week Art History
8) marble – 1 week Geoscience, 1 week Art History

Course Description:
This online course investigates select rocks and minerals used in the production of art between the Prehistoric Era and the Early Modern period. Topics covered include chemical and physical properties, occurrence in nature, the processes by which natural materials are acquired and worked, their symbolic and monetary value, and specific works of art in which they are found. Each material (ochre, garnet, lapis lazuli, rock crystal [quartz], igneous rocks [basalt, diorite and porphyry], alabaster and marble) is addressed in a 2-week unit. The seven units are split equally between scientific analysis of the materials and art historical case studies. A final project integrates Geosciences and Art History topics to investigate the use of a chosen natural material in a specific work of art.

Each material addressed in the course plays a crucial role in the history of art, and each one was particularly prized for its physical and material properties (color, hardness, etc.). Ochre was the first known pigment, and was in use by early humans for bodily adornment and for drawing and painting in caves and shelters as early as 100,000 years ago for bodily adornment and 40,000 years ago in cave art. Its availability worldwide and in multiple strong colors made it a desirable choice. Lapis lazuli, by contrast, was difficult to obtain, and difficult to refine as a pigment. It was first used to make small sculptures and cylinder seals in the...
Ancient world, and was prized for its brilliant blue color. The difficulty in grinding and purifying blue pigment from lapis lazuli made it one of the most expensive pigments in the Medieval and Renaissance world—it was worth its weight in silver! Pure blue lapis pigment, when found in a painting, is always a sign of great expense and importance. Rock crystal was valued for its clarity and purity, and its extreme brittleness meant that works made from it were valued for their intricacy and fragility. Nero reportedly destroyed two elaborate crystal goblets in a rage, and in so doing, deprived future generations of masterpieces of the sculptor’s art. In the Ancient Near East and Ancient Egypt, rock crystal was frequently used for amulets and other magical objects, while in the Medieval world, its purity was seen as a metaphor for the Virgin Mary. Garnet had a similar symbolic value in the Middle Ages: its red color was related to the blood of Christ, and it was thus used frequently in liturgical vessels. In the Ancient world, the rich red tone of garnets was prized in jewelry and in small-scale relief carvings. Igneous stones like porphyry, basalt and diorite were particularly prized for their extreme hardness and permanence, and thus the Law Code of Hammurabi was inscribed on basalt to ensure its permanence. Other Ancient Near Eastern rulers had images of themselves made from basalt and diorite in order to ensure that those works would survive for centuries. Imperial porphyry, an igneous stone with a rich red-purple color, came from a single remote quarry in the Egyptian mountains. Its use was reserved just for the Imperial family in Rome, and it was used for carved sarcophagi, for columns, for colored veneers on floors and walls, etc., as a sign of Imperial authority. Marble is of course one of the most familiar of all art materials, used frequently for sculpture from the very beginnings of art production. The Greeks and Romans in particular took great pains to obtain different types of marbles with specific colors, veining patterns, etc., for use in both sculpture and architecture. Finally, alabaster is one of the easiest of all stones to work: it is so soft that one can make a mark simply with a fingernail! Its intricate banding and translucency made it a favorite material for thin-walled bowls and vases in the Ancient Near East, Ancient Egypt, and in the Classical world. Later, in Early Christian and Medieval Italy, it was used for windows instead of glass—sun shining through alabaster casts a golden glow into a church interior. By the Late Gothic period, alabaster was being exploited as an easily sculpted material throughout Europe, with major quarries and workshops in England (Nottingham), France, and Northern Spain.

The name(s) of the faculty member(s) responsible for the development of the course:

Name: Heather McCune Bruhn (hcm1)
Title:
Phone:
Address: Campus: UP
City:
Fax:

Name: Maureen Feineman (mdf12)
Title:
Phone:
Address: Campus: UP
City:
Fax:

Course Justification

Instructional, Educational, and Course Objectives:
This section should define what the student is expected to learn and what skills the student will develop.
Upon completion of Geoscience / Art History 107, a student should be able to:
• Explain the difference between minerals, rocks, and anthropogenic materials.
• Identify selected minerals and rocks on the basis of their physical properties.
• Discuss how the materials in the course were acquired and worked, their economic and symbolic value, and the effect of these materials on the iconography and reception of works of art.
• Evaluate artistic monuments covered in this course in terms of their medium, composition, style, iconography and cultural context.
• Evaluate previously unseen works of art using the analytical tools of an art historian.
• Apply the analytical tools of a scientist (the scientific method) or an art historian (observation, analysis, reflection, synthesis) to investigate unknown materials and works of art

Evaluation Methods:
Include a statement that explains how the achievement of the educational objective identified above will be assessed. The procedures for determining students’ grades should be specifically identified.
Formative Assessment 1: Each unit will include an interactive “Jeopardy”-style quiz that will allow each student to choose a unique path through the quiz material. Total Value: 30% of final grade. Formative Assessment 2: Students will post responses to online discussions and evaluate peers’ responses. Total Value: 30% of Final Grade. Summative Assessment: Students will produce a final project or paper on a geologically-derived art material of their choice. The project will include full descriptions of: a) the chemical and physical properties of the material, b) the conditions of its origin and associations with other Earth materials, c) the natural setting in which it is/was acquired, d) the history of its use in art, e) artistic techniques pertaining to the material, f) its economic and symbolic value, and g) examination of significant historical artworks in which the material was used. Completion of the final project will require students to integrate what they have learned about the scientific and artistic value of Earth Materials. Total Value: 40% of Final Grade.

Relationship/Linkage of Course to Other Courses:
This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level
of instruction, for any prerequisites that may be specified, or for the course’s role as a prerequisite for other courses. This course is designed as a stand-alone general education class. There are no pre-requisites. Students who wish to learn more about Geosciences are encouraged to take GEOSC 1, GEOSC 20, or GEOSC 110H. Students who wish to learn more about Art History are encouraged to take Art H 100, Art H 111 or Art H 112.

Relationship of Course to Major, Option, Minor, or General Education:
This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.
This will be an online Inter-Domain General Education class (GN/GA) available to conventional and World Campus students in any major.

A description of any special facilities:
Video recording facilities and online course development support will be required during course development. No special facilities are needed to teach this online course.

Frequency of Offering and Enrollment:
Course pilot will be Spring 2019, anticipated offering every Fall and Spring with the possibility of summer.

Alignment with General Education Objectives

**EFFECTIVE COMMUNICATION** – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.

**KEY LITERACIES** – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

**CRITICAL AND ANALYTICAL THINKING** – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**INTEGRATIVE THINKING** – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

**CREATIVE THINKING** – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.

**GLOBAL LEARNING** – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people’s lives.

**SOCIAL RESPONSIBILITY AND ETHICAL REASONING** – the ability to assess one’s own values within the social context of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self-knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.

What component(s) of the course will help students achieve the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.

Key literacies:
Students will build observational skills, and apply these skills toward identifying and analyzing rocks, minerals, and historical works of art. They will interact with online content including tables and graphs, maps, photographs, videos, demonstrations, and interviews. Through this process they will accumulate knowledge of the physical properties of earth materials as they occur in nature and the means by which they are manipulated by humans to create works of art.

Integrative thinking:
Naturally occurring earth materials will be connected to the historic works of art in which they are found by means of exploring the human-driven processes by which they are extracted from the earth, transported, bought and sold, and worked into art materials and ultimately artworks. Special attention will be paid to the physical properties of rocks and minerals and the symbolism they imbue into the works of art in which they appear.

Global learning:
Students will be exposed to minerals and artworks from across the globe and through time (both historical and geological). They will explore how both art and nature connect humans of disparate backgrounds and perspectives.

How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student’s overall performance in this course.

Key literacies:
Biweekly quizzes will provide the foundation for building key literacies in natural science and art history. Students will apply knowledge of physical properties of earth materials in nature and as manipulated to create works of art. They will use observational skills to identify significant minerals, rocks, and works of art.
Integrative thinking:
Final projects will require students to integrate knowledge of earth materials from their occurrence in nature to appearance in a work of art, connecting these by means of their physical properties and the processes by which they were extracted from the earth, transported, and transformed into usable art materials. Biweekly discussions will provide a medium for students to explore how the choice of materials used to create a work of art contributes to its symbolic meaning.

Global learning:
Biweekly online discussions will provide a medium for students to explore universal themes such as “What makes an object valuable?” and “How do cultures use objects or materials to convey power?”

General Education Domain Criteria

General Education Designation: Inter-Domain

GA Criteria

- Explain the methods of inquiry in arts fields and describe how the contributions of these fields complement inquiry in other areas
- Demonstrate an expanded knowledge and comprehension of the role that the arts play in various aspects of human endeavor
- Demonstrate competence in the creation of works of art and design
- Demonstrate competence in analysis, critical thinking and interpretive reasoning through the exploration of creative works
- Identify and explain the aesthetic, historic, social, and cultural significance of important works of art and critically assess creative works, their own or others’, through evaluative processes of analysis and interpretation

What components of the course will help students achieve the domain criteria selected above?

*Role of arts:
This course is concerned with the very stuff from which art is made. Our lessons, which will include readings, video clips, and video lectures, will explore the role of arts in human endeavors, particularly as they relate to the acquisition of materials and their transformation into works of art. We will therefore address a variety of human endeavors including technology (mining, cutting, etc.), economics (trade, market values), artistic techniques (painting, sculpture, mosaic), and social/cultural systems (religion, propaganda, etc.).

*Analysis, critical thinking:
Biweekly discussion boards will allow students to analyze and interpret the materials and works covered in class in an open forum format. Higher point value questions in the biweekly quizzes will allow them to demonstrate their mastery of these same skills, and they will be able to creatively apply their new competencies by completing the final project. For the final project, each student will choose an earth material to explore in terms of its occurrence in nature, its chemical and physical properties, the means by which it is acquired and worked, and its symbolic and monetary value. The project will end with analysis of a few case study works made from the material in question.

*Critical assessment:
This will be modeled throughout individual lessons, evaluated in discussion boards and quizzes, and finally demonstrated by students in the final project.

GN Criteria

- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas
- Construct evidence-based explanations of natural phenomena
- Demonstrate informed understandings of scientific claims and their applications
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge
- Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems

What components of the course will help students achieve the domain criteria selected above?

*Methods of inquiry:
Course materials will explore the means by which the unique physical and chemical properties of minerals and rocks have historically been discovered, identified, and cataloged.

*Evidence-based explanations:
We will explore the connections between microscopic physical properties such as crystalline structure and the observable characteristics of natural materials that are inherent to their value as art materials (e.g. color, luster, hardness).

*Societal and philosophical implications:
We will explore how the symbolic and monetary value of an object is influenced by the physical properties of the materials from which they are made, including occurrence and distribution in nature, relative abundance / rarity, and the ease with which they are worked.

Integrative Studies

Explain how the intellectual frameworks and methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.

The entire course hinges on the relationships between the microscopic structures of earth materials, their macroscopic physical properties, and their usage and value as art materials. Observation and analytical thinking are key components of both natural science and art criticism. Students will evaluate works of art in the context of the materials, processes, and infrastructure used in their production.
Demonstrate that each of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.

Each lesson in the course (except the introduction) consists of a week devoted to Geosciences, followed by a week devoted to Art History. The discussions will address issues pertinent to both fields, and quiz questions will be divided equally between Art History and Geosciences as well. Similarly, the final project requires students to work with issues pertinent to both fields.

Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.

This is an online course that will be fully developed by Drs. Feineman and McCune Bruhn together, working with the eLearning divisions of both EMS and Arts and Architecture. Both will teach the course in its pilot semester (Spring ’19) and alternate in following semesters (Fall and Spring—summer arrangements to be determined). When Dr. Feineman teaches the course, the graduate assistant will come from Art History. When Dr. McCune Bruhn teaches, the graduate student will come from Geosciences. We will construct rubrics for grading discussions and projects together. Both fields of expertise will thus be represented every semester, and this should help to maintain consistent grading from semester to semester.

Describe the assessments that will be used to determine students’ ability to apply integrative thinking.

Biweekly discussion boards will require students to discuss an article, video, or other topic related to the material being covered in the particular two-week lesson. The discussions will allow students to fully explore key problems and issues related to our materials and the works of art featuring them in an open discussion forum. Students will be encouraged to move beyond simple reporting and engage in analysis of the material. Biweekly Jeopardy-style Quizzes will consist of questions pertaining to each of the two fields (Art History and Geosciences), and will also include some questions pertaining to both. Students will test basic knowledge in lower-value questions (e.g. identification of particular materials and working methods) and higher-level knowledge in higher-value questions (answers requiring analysis and synthesis of the material). A higher-value question might deal with the difficulty in obtaining a material and the relation of that difficulty to the symbolism and meaning of a work of art made with that material.

Final Projects will require students to model our approach in the course. That is, to take an earth material (rock or mineral) not covered in the course, and fully explore it from the Geosciences point of view (occurrence in nature, chemical and physical properties, acquisition, etc.) before addressing its use in the History of Art (how it was used as a material, its symbolic and material value, conservation issues, if any, and presentation of a limited number of case studies). Thus each student will be working both as a Geoscientist and as an Art Historian in order to produce the final project. This process will inevitably lead to a greater understanding of the connections between these two fields, and also to the connections between Art and Science beyond Geosciences and Art History.

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Campuses That Have Offered ( ) Over The Past 4 Years:

| semester | AB | AL | BK | BR | BW | CR | DS | ER | FE | GA | GV | HB | HN | HY | LV | MA | NK | PC | SH | SL | UP | WB | WC | WS | XC | XP | XS | YK |
UPLOADED DOCUMENTS FOLLOW:
Art History 107/Geosciences 107
Rocks, Minerals, and the History of Art

Instructors: Dr. Maureen Feineman, Geosciences
Dr. Heather McCune Bruhn, Art History

Graduate Assistant: TBA

Textbook:
- An open source textbook is available for no cost through the course site.

Additional Readings:
- Extra readings and videos will be made available through Canvas and through the Penn State Libraries

Course Websites:
- Drupal-based site designed by the Office of Digital Learning, Arts and Architecture (most course content will be found here, including Jeopardy quizzes)
- Canvas (we will use this for communications, discussion boards, and the final project)

Course Image Database, if needed
- ARTstor (log in for the first time through PSU libraries database menu, then use www.artstor.org)
- Full instructions for logging into ARTstor, registering, and obtaining course images can be found in a PDF downloadable tutorial in Canvas and in the Resources on our course site.

Course Description:
This online course investigates select rocks and minerals used in the production of art between the Prehistoric Era and the Early Modern period. Topics covered include chemical and physical properties, occurrence in nature, the processes by which natural materials are acquired and worked, their symbolic and monetary value, and specific works of art in which they are found. Each material (ochre, garnet, lapis lazuli, rock crystal [quartz], igneous rocks [basalt, diorite and porphyry], alabaster and marble) is addressed in a 2-week unit. The seven units are split equally between scientific analysis of the materials and art historical case studies. A final project integrates Geosciences and Art History topics to investigate the use of a chosen natural material in a specific work of art.
Course Objectives:

By the end of the course the student will be able to:

- Recognize the difference between minerals, rocks, and man-made materials
- Identify selected minerals and rocks on the basis of their physical properties
- Recall the processes by which minerals and rocks were formed in nature, extracted from the earth, and transformed into art materials throughout history
- Correctly use the vocabularies of geoscience and art history
- Recognize the symbolic, historical, and stylistic elements of selected works of art and the materials used to produce them
- Examine how the physical properties of natural materials relate to the manner in which they are used in works of art
- Analyze the economic and symbolic value of art materials, and the effect of these materials on the iconography and reception of works of art
- Apply the analytical tools of a scientist (the scientific method) or an art historian (observation, analysis, reflection, synthesis) to investigate unknown materials and works of art
- Create a verbal and/or visual documentation of the path taken by a selected rock or mineral from source in the Earth to finished work of art

Course Requirements:

- Bi-weekly Discussions 30%
- Bi-weekly Quizzes (including orientation quiz) 30%
- Final Project 40%
- TOTAL: 100%

Explanation of Course Requirements:

- **Discussions (on Canvas)**
  - For each unit following the orientation, you will be asked to comment on a fundamental issue or question related to the content of this course. You are expected to post at least one 200-500 word discussion/answer/opinion, and comment briefly (minimum 100 words) on at least two other posts.

- **Jeopardy-Style Quizzes (on our course website)**
  - In a Jeopardy Quiz, you have the opportunity to choose your own path through the content. We will have 5 categories (2 for Art History, 2 for Geosciences, 1 combined) and 3 point values (1 point, 2 points, and 3 points). You will choose your own combination of questions to achieve a total of 40 points. If you complete one entire category, you will have the chance to earn 1 bonus point. If you complete an entire point-value group, you will have the chance to earn bonus
points equal to the point category (so completion of all 3-pointers results in a 3-point bonus question). It is therefore possible to earn 46 points out of 40!

- **Final Project (Canvas dropbox)**
  - You will produce a final project or paper on a geologically-derived art material of your choice (this must be a material that is not covered in the course). The project will include full descriptions of: a) the chemical and physical properties of the material, b) the conditions of its origin and associations with other Earth materials, c) the natural setting in which it is/was acquired, d) the history of its use in art, e) artistic techniques pertaining to the material, f) its economic and symbolic value, and g) examples of significant historical artworks in which the material was used. Completion of the final project will require you to integrate what you have learned about the scientific and artistic value of Earth Materials.
  - You will be asked to turn in preliminary materials for your project throughout the semester. Preliminary materials (the first 2 items below) will be evaluated and returned with comments and suggestions.
    - Preliminary project description, due week 5 of the semester (10% of project grade).
    - Expanded thesis statement and outline with bibliography and at least 3 works of art for case studies, due week 10 of the semester (20% of project grade).
    - Final project, in its complete form (minimum 10 pages, standard 1-1.25" margins, double-spaced), due by the start of Finals Week (70% of overall project grade).

**Grading scale:**

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**Course Schedule:**

- **Week 1: Orientation**
  - Geosciences introduction
    - What is a mineral? What is a rock?
  - Art History introduction
    - How do we approach and evaluate works of art?
  - Interdomain introduction
    - How can the fields of Geosciences and Art History inform each other?
Orientation quiz, in Jeopardy-style.
  - You will be able to take this quiz an UNLIMITED number of times in order to familiarize yourself with the format and achieve the perfect score.

- **Weeks 2-3: Ochre**
  - Geosciences (week 2):
    - Physical and chemical properties of ochre
    - Occurrence in nature
    - Mining and processing
  - Art History (week 3):
    - Ochre as the first paint pigment
    - Symbolic value of ochre
    - Painting techniques (e.g. manuscripts, tempera, fresco, encaustic, oil) and object case studies
  - Discussion Board
  - Jeopardy quiz on Ochre

- **Weeks 4-5: Lapis Lazuli**
  - Geosciences (week 4):
    - Physical and chemical properties of lapis lazuli
    - Occurrence in nature
    - Mining and processing
  - Art History (week 5):
    - Lapis lazuli in ancient sculpture and jewelry: rarity, color and value
    - Lapis lazuli as pigment: difficulty, purity and value
    - Artificial forms of lapis lazuli, both ancient and modern
  - Discussion Board
  - Jeopardy Quiz on Lapis Lazuli
  - Final project proposal due by the end of Week 5!

- **Weeks 6-7: Quartz (Rock Crystal)**
  - Geosciences (week 6):
    - Physical and chemical properties of quartz
    - Occurrence in nature
    - Mining and processing
    - Quartz in the history of science (e.g. Pliny)
  - Art History (week 7):
    - Crystal carving and drilling
    - Symbolism of quartz/rock crystal
- Sculptures and vessels in the Ancient and Medieval world
- Rock crystal and light in the Islamic world
  - Discussion Board
  - Jeopardy Quiz on Quartz/Rock Crystal

**Weeks 8-9: Garnet**
- Geosciences (week 8):
  - Physical and chemical properties of garnet
  - Occurrence in nature
  - Mining and processing
- Art History (week 9):
  - Garnets in ancient jewelry
  - Garnet cloisonné in the Migration period (and provenance issues)
  - Garnet symbolism (e.g. Christ’s blood)
  - Discussion Board
  - Jeopardy Quiz on Garnet

**Weeks 10-11: Igneous Rocks (Basalt, Diorite, & Prophyry)**
- Geosciences (week 10):
  - Physical and chemical properties of igneous rocks
  - Rock textures
  - Occurrence in nature
  - Mining and processing
- Final Project Abstract and Outline due week 10 (see above under Course Requirements)
- Art History (week 11):
  - Sculpting hard materials
  - Hard rocks and concepts of permanence
  - Imperial Porphyry and its source in Egypt
  - Purple and its symbolism
  - Discussion Board
  - Jeopardy Quiz on Igneous Rocks

**Weeks 12-13: Alabaster**
- Geosciences (week 12):
  - Physical and chemical properties of alabaster
  - Egyptian alabaster (calcite) vs. European alabaster (gypsum)
  - Occurrence in nature
  - Mining and processing
- Art History (week 13):
• Sculpting soft stone
• The appeal of colored alabaster
• The English alabaster industry in the 15th century
• Polychromy on alabaster sculptures
  o Discussion Board
  o Jeopardy Quiz on Alabaster

• **Weeks 14–15: Marble**
  o Geosciences (week 14):
    • Physical and chemical properties of alabaster
    • Occurrence in nature
    • Mining and processing
    • Marble and acid (pollution, etc.)
  o Art History (week 15):
    • Marble working tools
    • Marble in Greece and Rome
    • Marble and Roman Imperial propaganda
    • Donatello, Bernini and Rodin
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• **FINALS WEEK**
  o Final project will be due at the beginning of the week in order to allow us time to grade.

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**Department of Art History's Academic Integrity Statement**

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Counseling and Psychological Services at Commonwealth Campuses
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Art History 107/Geosciences 107
Rocks, Minerals, and the History of Art

Course Abbreviation and Number: ARTH 107 / GEOSC 107
Credits: 3
Prerequisites/Co-requisites/Concurrent Requirements/Recommended Preparation: None
Course Attributes/Designations: General Education Inter-domain GA / GN

General Education Learning Objectives:

- KEY LITERACIES – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

- INTEGRATIVE THINKING – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

- GLOBAL LEARNING – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people’s lives.

Course Description:
This online course investigates select rocks and minerals used in the production of art between the Prehistoric Era and the Early Modern period. Topics covered include chemical and physical properties, occurrence in nature, the processes by which natural materials are acquired and worked, and specific works of art in which they are found. Each material (ochre, garnet, lapis lazuli, rock crystal [quartz], igneous rocks [basalt, diorite and porphyry], alabaster and marble) is addressed in a 2-week unit. The seven units are split equally between scientific analysis of the materials and case studies of key works of art. A final project integrates Geosciences and Art History topics to investigate the use of a chosen natural material in a specific work of art.

Course Learning Objectives:
Upon completion of Geoscience / Art History 107, a student should be able to:

- Explain the difference between minerals, rocks, and anthropogenic materials.
- Identify selected minerals and rocks on the basis of their physical properties.
- Discuss how the materials in the course were acquired and worked, their economic and symbolic value, and the effect of these materials on the iconography and reception of works of art.
- Evaluate artistic monuments covered in this course in terms of their medium, composition, style and iconography.
- Apply artistic analysis methods to previously unseen works of art.
Instructors:  Dr. Maureen Feineman, Geosciences  
Dr. Heather McCune Bruhn, Art History  
Graduate Assistant: TBA  

Textbook:  
- An open source textbook is available for no cost through the course site.

Additional Readings:  
- Extra readings and videos will be made available through Canvas and through the Penn State Libraries.

Course Websites:  
- Drupal-based site designed by the Office of Digital Learning, Arts and Architecture (most course content will be found here, including Jeopardy quizzes)  
- Canvas (we will use this for communications, discussion boards, and the final project)

Course Image Database, if needed  
- ARTstor (log in for the first time through PSU libraries database menu, then use www.artstor.org)  
- Full instructions for logging into ARTstor, registering, and obtaining course images can be found in a PDF downloadable tutorial in Canvas and in the Resources on our course site.

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- Evaluate artistic monuments covered in this course in terms of their medium, composition, style, iconography and cultural context.  
- Evaluate previously unseen works of art using the analytical tools of an art historian.

Course Requirements:  
- Bi-weekly Discussions 30%  
- Bi-weekly Quizzes (including orientation quiz) 30%  
- Final Project 40%  
- TOTAL: 100%
Explanation of Course Requirements:

- **Discussions (on Canvas)**
  - For each unit following the orientation, you will be asked to comment on a fundamental issue or question related to the content of this course. You are expected to post at least one 200-500 word discussion/answer/opinion, and comment briefly (minimum 100 words) on at least two other posts.

- **Jeopardy-Style Quizzes (on our course website)**
  - In a Jeopardy Quiz, you have the opportunity to choose your own path through the content. We will have 5 categories (2 for Art History, 2 for Geosciences, 1 combined) and 3 point values (1 point, 2 points, and 3 points). You will choose your own combination of questions to achieve a total of 40 points. If you complete one entire category, you will have the chance to earn 1 bonus point. If you complete an entire point-value group, you will have the chance to earn bonus points equal to the point category (so completion of all 3-pointers results in a 3-point bonus question). It is therefore possible to earn 46 points out of 40!

- **Final Project (Canvas dropbox)**
  - You will produce a final project or paper on a geologically-derived art material of your choice (this must be a material that is not covered in the course). The project will include full descriptions of: a) the chemical and physical properties of the material, b) the conditions of its origin and associations with other Earth materials, c) the natural setting in which it is/was acquired, d) the history of its use in art, e) artistic techniques pertaining to the material, f) its economic and symbolic value, and g) examples of significant historical artworks in which the material was used. Completion of the final project will require you to integrate what you have learned about the scientific and artistic value of Earth Materials.
  - You will be asked to turn in preliminary materials for your project throughout the semester. Preliminary materials (the first 2 items below) will be evaluated and returned with comments and suggestions.
    - Preliminary project description, due week 5 of the semester (10% of project grade).
    - Expanded thesis statement and outline with bibliography and at least 3 works of art for case studies, due week 10 of the semester (20% of project grade).
    - Final project, in its complete form (minimum 10 pages, standard 1-1.25” margins, double-spaced), due by the start of Finals Week (70% of overall project grade).

**Grading scale:**

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Course Schedule:

- **Week 1: Orientation**
  - Geosciences introduction
    - What is a mineral? What is a rock?
  - Art History introduction
    - How do we approach and evaluate works of art?
  - Interdomain introduction
    - How can the fields of Geosciences and Art History inform each other?
  - Orientation quiz, in Jeopardy-style.
    - You will be able to take this quiz an UNLIMITED number of times in order to familiarize yourself with the format and achieve the perfect score.

- **Weeks 2-3: Ochre**
  - Geosciences (week 2):
    - Physical and chemical properties of ochre
    - Occurrence in nature
    - Mining and processing
  - Art History (week 3):
    - Ochre as the first paint pigment
    - Symbolic value of ochre
    - Painting techniques (e.g. manuscripts, tempera, fresco, encaustic, oil) and object case studies
  - Discussion Board
  - Jeopardy quiz on Ochre

- **Weeks 4-5: Lapis Lazuli**
  - Geosciences (week 4):
    - Physical and chemical properties of lapis lazuli
    - Occurrence in nature
    - Mining and processing
  - Art History (week 5):
    - Lapis lazuli in ancient sculpture and jewelry: rarity, color and value
    - Lapis lazuli as pigment: difficulty, purity and value
    - Artificial forms of lapis lazuli, both ancient and modern
  - Discussion Board
  - Jeopardy Quiz on Lapis Lazuli
  - Final project proposal due by the end of Week 5!

- **Weeks 6-7: Quartz (Rock Crystal)**
  - Geosciences (week 6):
    - Physical and chemical properties of quartz
    - Occurrence in nature
    - Mining and processing
    - Quartz in the history of science (e.g. Pliny)
  - Art History (week 7):
- Crystal carving and drilling
- Symbolism of quartz/rock crystal
- Sculptures and vessels in the Ancient and Medieval world
- Rock crystal and light in the Islamic world
  o Discussion Board
  o Jeopardy Quiz on Quartz/Rock Crystal

- **Weeks 8-9: Garnet**
  o Geosciences (week 8):
    - Physical and chemical properties of garnet
    - Occurrence in nature
    - Mining and processing
  o Art History (week 9):
    - Garnets in ancient jewelry
    - Garnet cloisonné in the Migration period (and provenance issues)
    - Garnet symbolism (e.g. Christ’s blood)
  o Discussion Board
  o Jeopardy Quiz on Garnet

- **Weeks 10-11: Igneous Rocks (Basalt, Diorite, & Prophyry)**
  o Geosciences (week 10):
    - Physical and chemical properties of igneous rocks
    - Rock textures
    - Occurrence in nature
    - Mining and processing
  o Final Project Abstract and Outline due week 10 (see above under Course Requirements)
  o Art History (week 11):
    - Sculpting hard materials
    - Hard rocks and concepts of permanence
    - Imperial Porphyry and its source in Egypt
    - Purple and its symbolism
  o Discussion Board
  o Jeopardy Quiz on Igneous Rocks

- **Weeks 12-13: Alabaster**
  o Geosciences (week 12):
    - Physical and chemical properties of alabaster
    - Egyptian alabaster (calcite) vs. European alabaster (gypsum)
    - Occurrence in nature
    - Mining and processing
  o Art History (week 13):
    - Sculpting soft stone
    - The appeal of colored alabaster
    - The English alabaster industry in the 15th century
    - Polychromy on alabaster sculptures
  o Discussion Board
Jeopardy Quiz on Alabaster

**Weeks 14-15: Marble**
- Geosciences (week 14):
  - Physical and chemical properties of alabaster
  - Occurrence in nature
  - Mining and processing
  - Marble and acid (pollution, etc.)
- Art History (week 15):
  - Marble working tools
  - Marble in Greece and Rome
  - Marble and Roman Imperial propaganda
  - Donatello, Bernini and Rodin

Discussion Board
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**FINALS WEEK**
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Art History 107/Geosciences 107  
Rocks, Minerals, and the History of Art

Course Abbreviation and Number: ARTH 107 / GEOSC 107  
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Prerequisites/Co-requisites/Concurrent Requirements/Recommended Preparation: None  
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Course Learning Objectives:  
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- Explain the difference between minerals, rocks, and anthropogenic materials.
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Course Requirements:  
- Bi-weekly Discussions 30%  
- Bi-weekly Quizzes (including orientation quiz) 30%  
- Final Project 40%  
- TOTAL: 100%
Explanation of Course Requirements:

- **Discussions (on Canvas)**
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    - You will be able to take this quiz an UNLIMITED number of times in order to familiarize yourself with the format and achieve the perfect score.

- **Weeks 2-3: Ochre**
  - Geosciences (week 2):
    - Physical and chemical properties of ochre
    - Occurrence in nature
    - Mining and processing
  - Art History (week 3):
    - Ochre as the first paint pigment
    - Symbolic value of ochre
    - Painting techniques (e.g. manuscripts, tempera, fresco, encaustic, oil) and object case studies
  - Discussion Board
  - Jeopardy quiz on Ochre

- **Weeks 4-5: Lapis Lazuli**
  - Geosciences (week 4):
    - Physical and chemical properties of lapis lazuli
    - Occurrence in nature
    - Mining and processing
  - Art History (week 5):
    - Lapis lazuli in ancient sculpture and jewelry: rarity, color and value
    - Lapis lazuli as pigment: difficulty, purity and value
    - Artificial forms of lapis lazuli, both ancient and modern
  - Discussion Board
  - Jeopardy Quiz on Lapis Lazuli
  - Final project proposal due by the end of Week 5!

- **Weeks 6-7: Quartz (Rock Crystal)**
  - Geosciences (week 6):
    - Physical and chemical properties of quartz
    - Occurrence in nature
    - Mining and processing
    - Quartz in the history of science (e.g. Pliny)
  - Art History (week 7):
- Crystal carving and drilling
- Symbolism of quartz/rock crystal
- Sculptures and vessels in the Ancient and Medieval world
- Rock crystal and light in the Islamic world
  - Discussion Board
  - Jeopardy Quiz on Quartz/Rock Crystal

- **Weeks 8-9: Garnet**
  - Geosciences (week 8):
    - Physical and chemical properties of garnet
    - Occurrence in nature
    - Mining and processing
  - Art History (week 9):
    - Garnets in ancient jewelry
    - Garnet cloisonné in the Migration period (and provenance issues)
    - Garnet symbolism (e.g. Christ’s blood)
  - Discussion Board
  - Jeopardy Quiz on Garnet

- **Weeks 10-11: Igneous Rocks (Basalt, Diorite, & Prophyry)**
  - Geosciences (week 10):
    - Physical and chemical properties of igneous rocks
    - Rock textures
    - Occurrence in nature
    - Mining and processing
  - Final Project Abstract and Outline due week 10 (see above under Course Requirements)
  - Art History (week 11):
    - Sculpting hard materials
    - Hard rocks and concepts of permanence
    - Imperial Porphyry and its source in Egypt
    - Purple and its symbolism
  - Discussion Board
  - Jeopardy Quiz on Igneous Rocks

- **Weeks 12-13: Alabaster**
  - Geosciences (week 12):
    - Physical and chemical properties of alabaster
    - Egyptian alabaster (calcite) vs. European alabaster (gypsum)
    - Occurrence in nature
    - Mining and processing
  - Art History (week 13):
    - Sculpting soft stone
    - The appeal of colored alabaster
    - The English alabaster industry in the 15th century
    - Polychromy on alabaster sculptures
  - Discussion Board
• Jeopardy Quiz on Alabaster

• Weeks 14-15: Marble
  o Geosciences (week 14):
    ▪ Physical and chemical properties of alabaster
    ▪ Occurrence in nature
    ▪ Mining and processing
    ▪ Marble and acid (pollution, etc.)
  o Art History (week 15):
    ▪ Marble working tools
    ▪ Marble in Greece and Rome
    ▪ Marble and Roman Imperial propaganda
    ▪ Donatello, Bernini and Rodin
  o Discussion Board
  o Jeopardy Quiz on Marble

• FINALS WEEK
  o Final project will be due at the beginning of the week in order to allow us time to grade.

PLEASE NOTE THAT WE TAKE ACADEMIC INTEGRITY VERY SERIOUSLY.

Academic Integrity (Excerpt from PSU Senate Legislation, February 29, 2000):
According to the Penn State Principles and University Code of Conduct:

> Academic integrity is a basic guiding principle for all academic activity at Penn State University, allowing the pursuit of scholarly activity in an open, honest, and responsible manner. In accord with the University’s Code of Conduct, you must not engage in or tolerate academic dishonesty. This includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students.

Any violation of academic integrity will be investigated, and where warranted, punitive action will be taken. For every incident when a penalty of any kind is assessed, a report must be filed. This includes the discussion boards: plagiarism on a discussion board will result in no bonus points being awarded for that board, and, depending on the nature of the violation, the removal of further bonus privileges (and a report filed with the Dean’s office).

Department of Art History’s Academic Integrity Statement
Academic integrity is a fundamental principle underlying all scholarly work, and a necessity for the creation of an honest and positive learning environment. Accordingly, adherence to the basic precepts of academic integrity is expected in all student work. The dishonest representation of someone else’s work as your own (i.e. cheating, plagiarism) will not be tolerated, nor will acts of deception or falsification. Acknowledgment in your written work of information, points of view, and quotes taken from other sources should always be made through appropriate references (i.e. footnotes, bibliography). Violations of academic integrity will be dealt with in accordance with the policies of the University.
Statement Regarding Copyright
All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own use as needed, but unauthorized distribution and/or uploading of materials without the instructor’s express permission is strictly prohibited. University Policy AD 40, Recording of Classroom Activities and Note Taking Services, addresses this issue. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the University’s Code of Conduct and/or liable under Federal and State laws.

Activation Codes:
This course requires the purchase of a course activation through PSU Pays. You will be prompted to make this purchase by a dialog box that will appear at the lower left corner of your course website. You may pay with a credit card, and successful payment will result in immediate access. More information about the course activation can be found in the Materials Letter that was sent at the start of the semester (a copy of this letter is also posted in Canvas).

Affirmative Action & Sexual Harassment:
The Pennsylvania State University is committed to a policy that all persons shall have equal access to programs, facilities, admission, and employment without regard to personal characteristics not related to ability, performance, or qualifications as determined by University policy or by Commonwealth or Federal authorities. Penn State does not discriminate against any person because of age, ancestry, color, disability or handicap, national origin, race, religious creed, sex, sexual orientation, or veteran status. Direct all inquiries to the Affirmative Action Office, 211 Willard Building.

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In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: See documentation guidelines. If the documentation supports your request for reasonable accommodations, your campus disability services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early as possible. You must follow this process for every semester that you request accommodations.

Counseling and Psychological Services Statement:
Many students at Penn State face personal challenges or have psychological needs that may interfere with their academic progress, social development, or emotional wellbeing. The university offers a variety of confidential services to help you through difficult times, including individual and group counseling, crisis intervention, consultations, online chats, and mental health screenings. These services are provided by staff who welcome all students and embrace a philosophy respectful of clients’ cultural and religious backgrounds, and sensitive to differences in race, ability, gender identity and sexual orientation.

Counseling and Psychological Services at University Park (CAPS): 814-863-0395
Counseling and Psychological Services at Commonwealth Campuses
Penn State Crisis Line (24 hours/7 days/week): 877-229-6400
Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741
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