Love is fleeting. Stone tools are forever.

Course Description: For the first 99% of human history, the most common form of artifact produced and used by people were made of stone. Stone artifacts make up the most common material culture found at more than 90% of archaeological sites. No matter what one’s specific interest in archaeology may be, understanding how people made and used stone tools is central to an understanding of human behavior. Many of archaeology’s major insights into human behavior derive directly from the theoretical and methodological foundations of lithic analysis. In this course, we explore the ways that archaeologists study stone tools and will participate in several experimental and actualistic projects including flintknapping, heat alteration of lithic material, and use wear analysis of experimentally manufactured and used tools.

Learning Goals: This class is designed to help you build:

1) Knowledge of human cultures and the natural world. You will explore through reading and discussion how archaeologists have used experimental and actualistic studies to recognize the physical and cultural parameters of stone tool production, use and discard at archaeological sites. You will also undertake experimental and actualistic studies to experience the process of stone tool technology.

2) Critical, practical, and creative thinking skills. You will learn to recognize the physical and mental parameters of producing and using stone tools from flakeable stone from a first-hand, experienced perspective as well as from reading and discussing primary literature.

3) Effective communication skills. A take-home written exam will allow you to demonstrate your abilities to answer specific questions about the class readings. In addition, you will communicate your project, problem solving efforts, and results of your efforts to the class in a detailed, conference-style presentation, along with a written report of your class project.

Expected Student Outcomes: After successful completion of this course, students will be able to articulate the current state of stone tools analysis in the archaeological literature. Students will be able to evaluate and to critique how and why archaeologists interpret stone tools based on their own experimental studies of tools. Students will be able to investigate and evaluate a specific archaeological problem using experimental data or archaeologically derived artifacts and will be able to present that investigation to their audience.

Student Effort: This 3-credit course will require an average of nine hours per week to achieve the learning goals of this course. Important: Nine hours per week is the expectation for the average student. You may wish to, or need to, spend more time to obtain desired outcomes.
How the class is structured: See the week-by-week schedule for weekly topics and activities. From Week 2 through Week 10 students will be expected to have read assigned readings and be prepared to discuss them in the class. Most weeks we will also have a hands-on experience in some aspect of lithic production or analysis. After Week 10 emphasis will be on using class time to complete final projects.

Grading: Grading requirements differ significantly between undergraduate and graduates. The graduate project will be sophisticated in design and execution such that it will produce a paper that can form the basis for a chapter in a thesis or that can be modified as a published article. In addition, the presentation will be sophisticated and complete enough to serve as a contribution at a professional scholarly meeting. The increased effort dedicated towards the research project accounts for the differences in weighting the graded projects.

Undergraduates: Grading will be based on in-class participation (worth 33.333%), a mid-term exam (worth 33.333%) and an experimental research project (worth 33.333%).

Graduate Students: Grading will be based on in-class participation (worth 30%), a mid-term exam (worth 20%) and an experimental research project (worth 50%).

Class Participation: Class participation comprises several laboratory projects such as flintknapping, heat alteration and experimental use of tools, as well as a in-class discussion of weekly readings (rubrics attached). You will NOT be graded on how skillful you become at making tools. While a significant portion of class will be devoted to hands-on experimentation with stone tools, the skillful reproduction of stone tools (e.g. replicating projectile points) requires more time than we will have to devote in class. Students are responsible for all readings assigned to the class, and in addition may be assigned specific roles for class discussion on a weekly basis. Since your participation is essential to the success of this class, attendance is mandatory. A detailed rubric for how I assess your class participation is found on page 9-11 of this document.

Midterm: Both graduate and undergraduate students will complete a take-home exam based on the readings. The exam will be approximately 1000-1250 words in length. It will be distributed 10/17/19 and will be due 10/24/19 at noon. Documents turned in after the posted deadline will be docked 10% per day. A detailed rubric showing how I grade the exam is found on page 12.

Project: The research project will be negotiated between student and faculty member. It may be solo or done as part of a group effort, but will be done in collaboration with the instructor. It may be experimental in nature, or it may be conducted on an extant archaeological collection. It will include a literature review of the problem under consideration. Documents turned in after the posted deadline will be docked 10% per day. A detailed rubric for the project presentation and final product is found on page 12.

Undergraduates: The results of the project will be presented as a 15-minute PowerPoint assisted
presentation to the class. Following the presentation, a 10 minute question and answer period will allow students to provide and receive feedback on the project. The results of the project will consist of the data collected in a report, at least 1000 and no more than 1500 words long. **The final project is due 12/19/19 at noon.**

*Graduates:* The results of the project will be presented as a 20-minute PowerPoint assisted presentation to the class. Your presentation is not merely a longer version of an undergraduate presentation. **The presentation must be suitable for presentation at a professional scholarly meeting such as the Society for American Archaeology.** Following the presentation, a 10 minute question and answer period will allow students to provide and receive feedback on the project. **The results of the project will consist of the data collected in a report, at least 2000 and no more than 2500 words long, that can form the basis of a thesis chapter or publishable peer-reviewed paper. The final project is due 12/19/19 at noon.**

**Group Grading** Students working in a group project will be graded as individuals, based on their overall contribution to the final product. Assessment of contribution will be made by the instructor through observing group activities in class, as well as a group self-assessment.

**Grade Scale:** Appropriately weighted student points for participation, mid-term and class project will be summed. Grades will be based on the proportion of points a student has earned, according to the following chart:

<table>
<thead>
<tr>
<th>GRADE</th>
<th>PERCENT</th>
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<th>PERCENT</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
<td>C</td>
<td>72-74%</td>
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<tr>
<td>A-</td>
<td>87-89%</td>
<td>C-</td>
<td>69-71%</td>
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<tr>
<td>B+</td>
<td>84-86%</td>
<td>D+</td>
<td>65-68%</td>
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<tr>
<td>B</td>
<td>81-83%</td>
<td>D</td>
<td>60-64%</td>
</tr>
<tr>
<td>B-</td>
<td>78-80%</td>
<td>D-</td>
<td>55-59%</td>
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<tr>
<td>C+</td>
<td>75-77%</td>
<td>F</td>
<td>0-55%</td>
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**Texts:**
One text for reference and a number of case studies, theoretical, methodological, and other useful readings are used for this class.

**Please purchase:**
Andrefsky, Jr., William

**Other Readings:** will be distributed to the class as pdf files. See Pages 6-8.
**Students with Disabilities:** If you have a disability and will need accommodations in order to meet any of the requirements of this course, please contact me by the third week of class or as soon as possible after a disability has been recognized. Please also contact the Accessibility Resource Center (229-5822) to obtain your Verified Individual Services and Accommodations (VISA) documentation.

http://www4.uwm.edu/sac/

**Academic Conduct:** I expect that all students abide by rules of proper academic conduct. According to Chapter UWS 14: “Academic misconduct is an act in which a student seeks to claim credit for the work or efforts of another without authorization or citation, uses unauthorized materials or fabricated data in any academic exercise, forges or falsifies academic documents or records, intentionally impedes or damages the academic work of others, engages in conduct aimed at making false representation of a student's academic performance, or assists other students in any of these acts. Prohibited conduct includes cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.”

So please don’t do any of those prohibited things, or you will be subject to disciplinary action.

**Religious observances:** If you need accommodations due to religious observances, please let me know as soon as possible.

**Military Duty:** If you need accommodations due to call-up to active military duty, please let me know as soon as possible.

**Discriminatory conduct:** Discriminatory conduct such as disrespectful sexual, ethnic or racist comments on discussions, etc., is not tolerated in this class.

For other aspects of classroom behaviors and academic standards, incompletes, or other university policies, etc. please consult your student handbook.

**Please note:** The content of this course, including notes, comments, articles, and images, is copyrighted. Students may not copy, forward, sell, or allow access to course materials to other people not enrolled in this class for any purposes.
<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>2</td>
<td>9/12 Discussion: Typology and classification. Readings: (Andrefsky Jr. 2005), Ch. 1-4, (Brown 1982), (Cook and Comstock 2014) Whittaker (1994-Ch. 6), Lab: Type Exercise</td>
</tr>
<tr>
<td>4</td>
<td>9/26 Discussions; Debitage Analysis Readings: (Ahler 1989) (Sullivan and Rozen 1985-1989 plus comments); Andrefsky (Ch. 6), Lab: Hard Hammer reduction, continued.</td>
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<td>7</td>
<td>10/17 Discussion: Heat Alteration; (Rick 1978) (Jeske, et al. 2010) (Crabtree and Butler 1964) Lab: Preparation of samples and Heating  <strong>Midterm handed out</strong></td>
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<tr>
<td>8</td>
<td>10/24 <strong>Midterm Due Noon</strong> Readings: (Purdy 1974) (Schmidt 2014) Lab: Comparison of heated and unheated samples; morphology and knapping changes.</td>
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<td>9</td>
<td>11/31 Discussion: Morphofunctional Analysis of function Readings: Andrefsky (Ch. 8), (Shott 1993) (Bettinger and Eerkens 1999) (Kay and Mainfort Jr. 2014) Lab: Production of tools for experimental use wear.</td>
</tr>
<tr>
<td>11</td>
<td>11/14 Use wear experiment: Microscopic analysis of experimentally used tools. Blind tests. Readings (Pawlik 2014) (Evans 2013) (Young and Bamforth 1990) (Final Project Negotiated)</td>
</tr>
<tr>
<td>12</td>
<td>11/21 Final Project Production: Laboratory work supervised by instructor. Readings: Based on project.</td>
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<td>13</td>
<td>11/28 Happy Thanksgiving!!</td>
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<tr>
<td>14</td>
<td>12/5 <strong>Presentation of Final Projects</strong>. Question and answer periods by instructor and peers.</td>
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<tr>
<td>15</td>
<td>12/12 Study Day.</td>
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<tr>
<td>16</td>
<td>12/15 Final Presentations Due.</td>
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</tbody>
</table>
Readings

Adams, Jenny L.  
2014  Ground stone use-wear analysis: a review of terminology and experimental methods.  

Ahler, Stanley A.  
1989  Mass Analysis of Flaking Debris: Studying the Forest Rather than the Trees. In  

Andrefsky Jr., William  

Bettinger, Robert L and Jelmer Eerkens  

Brown, James A.  

Cook, Robert A and Aaron Comstock  

Crabtree, Don E. and B. Robert Butler  

Driscoll, Killian and Maite García-Rojas  

Evans, Adrian Anthony  
2013  On the importance of blind testing in archaeological science: the example from lithic functional studies. Journal of Archaeological Science:5-14.

Galán, A. B. and Domínguez-Rodrigo  
2014  Testing the efficiency of simple flakes, retouched flakes, and small handaxes during butchery.  
Archaeometry 56(6):1054-1074.
Hörr, Christian, Elisabeth Lindinger and Guido Brunnett

Jeske, Robert J. and Katherine M. Sterner-Miller
2015 Microwear Analysis of Bipolar Tools from the Crescent Bay Hunt Club Site (47JE904). Lithic Technology 40.

Jeske, Robert J. and Rochelle Lurie

Jeske, Robert J., Daniel M. Winkler and Dustin Blodgett

Kay, Marvin and Robert C. Mainfort Jr.

Langejans, Geeske HJ

Lenardi, Michael J and Daria E Merwin

Lurie, Rochelle and Robert J. Jeske

Newcomer, Michael H. and Lawrence H. Keeley

Odell, George

Odell, George and Frieda Odell-Vereeken

Pargeter, Justin and Justin Bradfield

Pawlik, Alfred F

Purdy, Barbara A.

Rick, John Winfield

Schmidt, Patrick

Shott, Michael J.

Sullivan, Alan P. and Kenneth C. Rozen

Whittaker, John C.

Yang, X, Z Ma, Q Li, L Perry, X Huan, Z Wan, M Li and J Zheng

Young, Donald and Douglas B Bamforth
Anthropology 502
Lithic Analysis and Experimentation
Robert J. Jeske

Class Participation Rubric

Experimental or actualistic studies require your full attention to detail. It is critical that you come to class prepared to discuss the readings. Experimental or actualistic studies need to be contextualized by theoretical and methodological understanding of why we do what we do. In addition, to be able to write about what you have read requires critical thought and often engenders more than one reading of the material. It also should encourage further reading along the lines of the subject—readings that are not required for the class, but which will enhance the student’s ability to understand the course materials. I highly encourage you to take questions to the internet, to get hold of references that the authors of your readings have cited, and explore the topics under consideration beyond what is required for class.

I will evaluate each student on a weekly basis. We normally have 12 discussions and/or in-class project participations. A maximum of 8 points per week will be awarded to each student based on participation (8 x 12 = 96 possible points). Please note that since you have not had a chance to read before class started, all students will be awarded 4 points for the first week to bring the total maximum points to 100.

At a minimum, students must demonstrate that they have read and thought about the assignment for the week. Students are welcome to add to the discussion whenever they feel that they have something to contribute positively. However, do not feel the need to simply add verbiage in order to gain points. Your grade is about quality, not quantity.

In addition, the in-class experiments and activities are not about frenetic activity. I am more interested in your learning about the processes of lithic tool production and use than I am how many flakes you can knock off of a core. The following set of guidelines will show you what I look for in class participation.

Excellent (6-8 points)
The student provides insight or additional information that is related to the readings. It is clear
that the student has read and thought about the assigned readings and has been able to bring other materials to bear on the assignment. The points are relevant to the discussion and the student is able to discuss concepts or tie other readings or content to the current conversation. The student responds to other students directly and substantively in a way that advances the conversation. The contribution may lead to new discussion topics. Discussion is respectful of others and their views (e.g., no insulting, dismissive, or derogatory comments).

The student engages with the project and other members of the class to solve the problem at hand. The student is prepared, efficiently and effectively obtains the materials for the class project, and conscientiously attends to the work at hand. The student listens to, and observes carefully, directions and example for the activities to be carried out. The student is diligent about laboratory safety procedures.

**Good (3-5 points)**
The student makes it clear that the he or she has read and thought about the assigned reading, but the content does not move the conversation forward significantly. The comments are relevant to the discussion and the student is able to discuss what was read, does not bring in concepts or tie other readings or content to the current conversation. Discussion does not go beyond the required reading material. The student responds to other students but the response is less likely to lead to new discussion topics. Comments are respectful of others and their views (e.g., no insulting, dismissive, or derogatory comments).

The student engages with the project and other members of the class to solve the problem at hand. The student is prepared, efficiently and effectively obtains the materials for the class project, and conscientiously attends to the work at hand. The student listens to, and observes carefully, directions and example for the activities to be carried out. The student is diligent about following laboratory safety procedures.

**Superficial (1-2)**
It is not clear that the student has read the material, and/or it appears that he or she has not spent much time thinking about the readings. The student indicates little familiarity with the concepts in the readings or in the discussion. The student is not prepared to respond to other students or commonly repeats or un-reflexively makes statements based on other’s comments with little or no justification or elaboration (e.g., “I agree”). The comments are not likely to lead to new discussion topics. Comments are respectful of others and their views (e.g., no insulting, dismissive, or derogatory comments).

The student is not fully engaged with the project and other members of the class to solve the problem at hand. The student is less prepared, does not obtain the materials for the class project efficiently, and does not make concerted efforts to complete the project hand. The student does not listen to or observe carefully the directions and examples for the activities to be carried out. The student is not diligent about laboratory safety procedures.

**Irrelevant (0)**
The student misses class without excuse [https://www4.uwm.edu/dos/support/student-absences.cfm](https://www4.uwm.edu/dos/support/student-absences.cfm). The student does not appear to have read the material. Comments show little to no understanding of the material or ideas under discussion and will not lead to new discussion topics. Comments are respectful of others and their views (e.g., no insulting, dismissive, or derogatory comments).

The student is not engaged with the project and other members of the class to solve the problem at hand. The student is unprepared, does not obtain the materials for the class project efficiently, and makes little to no effort to complete the project hand. The student does not listen to or observe carefully the directions and examples for the activities to be carried out. The student is not diligent about laboratory safety procedures.

**Disruptive (0)**

The student’s comments are unrelated to the discussion, and/or are disrespectful of others and their views (e.g., insulting, dismissive, or derogatory comments).

The student is not engaged with the project and other members of the class to solve the problem at hand. The student is unprepared, does not obtain the materials for the class project and/or makes no effort to complete the project hand. The student ignores directions and example for the activities to be carried out. The student ignores laboratory safety procedures.

**No Response (0)** The student does not make an effort to add to class discussion, or when called upon to make a comment, cannot respond to questions.

The student makes no effort to work on hands-on projects.

**N.B.** The requirement that students must act respectfully does not mean that you must agree with each other—or with me. Disagreement and debate is essential to the meaningful articulation of ideas. It is through debate that we winnow good ideas from bad ideas. You are encouraged to take issue with statements that you think are incorrect or in need of elaboration. However, disagreement must be tempered by tact, and comments must be backed up with information. Your opinions are not important, but your knowledge is. In other words: Don’t tell me what you think, tell me what you know.

**N.B.** All students will vary in their capacity to knap flint. All hands-on learning is about the experience, not about the final result. Thus, you will not be graded on your ability to produce aesthetically pleasing artifact types, nor your ability to identify use-wear polish under a microscope. You will be graded on your ability to grasp the concepts of physics and fracture mechanics necessary to produce stone tools, and to use those tools in experiments and actualistic studies we devise in class, and make observations about the results of those experimental and actualistic activities.
Midterm Rubric

Word Count Limits /10
Appropriate in-text citations (American Antiquity): /10
References Cited format (American Antiquity): /10
Appropriate References, quantity and relevance: /10
Problem focus; direct answer to question: /10
Argument coherence; evidence, logic: /25
Clarity; proof-read, grammar, consistency: /25
Minus pts. Late 0
Total pct. /100

Project/Presentation Rubric

Word Count Limits /5
Appropriate in-text citations (American Antiquity): /5
References Cited format (American Antiquity): /5
Appropriate References, quantity and relevance: /10
Problem/focus; direct answer to question: /10
Argument coherence; evidence, logic: /25
Clarity; proof-read, grammar, consistency: /25
Appropriate presentation graphics /10
Presentation time limits /5
Minus pts. Late 0
Total pct. /100