



George Mason University

HIST 315

STEM in Society: A History

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Semester and Schedule: see last page of this syllabus

Office hours: By appointment

Course Syllabus

Course Goals and Objectives: This course is the foundational course for the STEM in Society minor degree program and is a Mason Core course for Global Understanding. In this course, students will use case histories to explore the cultural and social aspects of global STEM development during the Scientific and Industrial Revolutions, roughly the period from 1700 to 1900. Students will be required to critically analyze articles, books chapters, other readings and media, and articulate their findings and viewpoints in classroom and online discussions and presentations. They will also work in a team project which will present its results to the class in live and online formats. At the conclusion of this course, the following learning objectives will have been achieved:

- The ability to strategically analyze and articulate how developments in STEM (Science, Technology, Engineering and Mathematics) impacted, and were impacted by, larger societal and cultural events in the Scientific and Industrial Revolutions, by understanding of how the patterns and processes of globalization make visible the interconnections and differences among and within contemporary global societies.
- The ability to critically evaluate how those developments carried through to the current age, and be able to apply those evaluations to dilemmas facing today's societies, by demonstrating the development of intercultural competencies and exploring the individual and collective responsibilities within a global society through analytical, practical, or creative responses to problems or issues, using resources appropriate to the field.

This course also achieves the following learning outcomes:

- The [Mason Impact area](#) of Research and Creative activities where students conduct research to make an intellectual or creative contribution to their fields of study. The outcomes are: (1) demonstrating an understanding of how knowledge is generated and disseminated through scholarship; (2) ability to articulate a scholarly question and engage in the key elements of the scholarly process; (3) ability to communicate knowledge from an original scholarly or creative project.
- The [GMU Core Global Understanding portfolio](#), which requires students to see the world from multiple perspectives, reflect upon their positions in a global society, and be prepared for future engagement as global citizens. The outcomes are: (1) demonstrating an understanding of how the patterns and processes of globalization make visible the interconnections and differences among and within contemporary global societies; (2) demonstrating the development of intercultural competencies; (3) explore individual and collective responsibilities within a global society through analytical, practical, or creative responses to problems or issues.

Methodology: The course is conducted in a student-led, Harvard-style case study format. It consists of: lectures; extensive reading of book chapters and articles on historical case studies; in-class discussions with both small and large groups; and group research projects and presentations. The student-led case-study method is particularly effective for analyzing and synthesizing complex subjects. These case study discussions will require each student to come prepared with their written responses to questions on assigned reading, and to participate by sharing their understanding and interpretation of the material. A typical class will consist of about 45 minutes lecture, 45 minutes of small-group discussion, and 45 minutes large-group discussion.

As with almost all university-level courses, you should expect to spend a considerable amount of time on your homework assignments. The general rule of thumb for university courses has traditionally been at least two hours of homework per week for every class hour. You should therefore not be surprised to spend six or more hours per week outside class on your HIST 315 assignments.

Prerequisites: None

Grading (Note that there are no quizzes, midterm or final. You're welcome):

Homework:	40%	Lead Large-Group Class Discussion:	10%
Class Participation:	10%	Final Team Project:	40%
(10% proposal, 10% mid-review, 20% final presentation)			

Letter Grade	Grade Point	Remark
A	4.00	Excellent
A-	3.67	Excellent
B+	3.33	Good
B	3.00	Good
B-	2.67	Good
C+	2.33	Competent
C	2.00	Competent
C-	1.67	Unsatisfactory
D	1.00	Unsatisfactory
F	0.00	Failing

Grading rubrics

Assignments: homework, team project

Analysis of Facts -- 50%

- Understands the basic facts and key issues in the assignment
- Makes relevant links between facts and analysis

Critical Thinking -- 50%

- Logically develops sequence of thought: facts, analyses and conclusions
- Supports conclusions with facts and analyses

Lead class discussions

- Clearly expresses main themes and ideas of the reading, both on slides and orally (50%)
- Engages classmates by inviting all points of view, compatible and competing (50%)

Class participation

- Engages with the group and respects others' views (50%)
- Develops original points and builds upon other's ideas during discussions (50%)

Class Attendance: You are expected to properly complete your assignments and attend classes in order to effectively participate in the discussions and presentations. At the university level, it is a generally-recognized tenet that you will learn as much from your fellow students as you will from any individual professor. In this course, much of your learning will occur through the group discussions of readings, presentations by your fellow students, and through the interactions in your team project. This cannot happen if you are not in class. Therefore, *both your attendance and how active you are in discussions will be taken into account for grading.*

I will take roll call in each class. All students experience events that may prevent them from attending class – personal circumstances, religious holidays, etc. If you can't attend a class, or if you must arrive late or leave early, let me know as far ahead of time as possible. If you are assigned to lead a discussion or make a presentation and you have to miss class, you **MUST** tell me well ahead of time, in order that I can make adjustments. If you fail to do so, I may not be able to make adjustments and you may not receive credit.

Materials: There is no course textbook and you are not required to buy any books for class. I will provide readings for class assignments on GMU's Blackboard system. Students will use the GMU Library or other library resources for books to review, and for performing group research and presentations. You will need access to the GMU Blackboard system on a continual basis, and I will be communicating with you via GMU e-mail. Your devices (computer, laptop, tablet, etc.) need to be configured to the latest versions of these systems, so check with GMU's Computing and Technology resource page for those requirements.

Class Schedule and Assignments

Class	Topics	HW to be completed	Class Assignment
1	Course introduction	None	Lecture: Introduction
2	What was the Scientific Revolution?	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: Scientific Revolution
3	What was the Industrial Revolution?	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: Industrial Revolution
4	Empire building	Assigned readings Writing assignments <i>Form teams to select project topic</i>	Readings: Presentations and discussion Lecture: Empire Building
5	Energy	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: Energy
6	Transportation	Assigned readings Writing assignments <i>Provide professor with team project proposal</i>	Readings: Presentations and discussion Lecture: Transportation Team Project: Project Proposal Presentation

Class	Topics	HW to be completed	Class Assignment
7	Industrialization	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: Industrialization
8	Reorganizing the workplace	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: None
9	Sanitation	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: Sanitation
10	Biology and chemistry	Assigned readings Writing assignments <u>Submit Mid-Project Review</u>	Readings: Presentations and discussion Lecture: None Team Project: Mid-Project Review
11	Public health and medicine	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: None
12	Information and communications	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: None
13	When computers were people	Assigned readings Writing assignments	Readings: Presentations and discussion Lecture: None
14	Team project presentations	<u>Submit team project presentation</u>	Team Project Presentations

See Class Schedule Calendar on the last page of this syllabus for dates of classes.

Homework and Class Discussions: We use the Harvard Business School case study method to analyze the homework readings (articles and book chapters) using critical, open-ended questions. This involves three steps: (1) Homework -- individual analysis of the reading by answering the questions in writing; (2) In-Class Small-Group Discussion – 3-5 individuals who discuss the questions and compare notes, and (3) In-Class Large-Group Discussion, where the whole class is led by a student in discussing the questions.

Each reading selection will be accompanied by a list of reading questions in a separate Word document. *Most of the questions are framed as if you are an employee writing for your boss.* This is intentional – university is preparation for your career, and clear, concise writing is vital to your achievement. Therefore, answer the questions as if you were writing a memo at work. Provide SHORT BUT COMPLETE (3-5 paragraphs each) answers to each of these questions and submit them to before the class using Blackboard. Please view an example in the Class 1 Assignments folder. This will give you an idea of the way you should frame and develop your homework answers. You will be graded on: critical thinking in answering the questions; your use of SPECIFIC examples from the readings and from other sources (which I strongly encourage you to use) in order to support your arguments; and the clarity of your writing, which includes proper spelling, punctuation and grammar. During class group discussion, please use your writings as a reference for your points of view.

You will submit all your homework on Blackboard using any supported format (MS Word, PDF, etc.). Please label the file with YOUR last name and class number, in the following format: LASTNAME-CLASS X. And PLEASE use the spell-check and grammar check before submitting the work (I encourage you to visit [GMU's Writing Center](#)). I will review the document, add my comments and grade, and then post it back to you via Blackboard. You may resubmit as often as needed.

Students will be assigned, on a rotating basis by sign-up sheet, to lead the large-group class discussions; that is, one student will lead the discussion for each reading, 1-2 readings per class. (In other words, you may be leading class discussions several times during the course.) Each of those students leading the large-group discussion will submit and present in class a PowerPoint presentation (template is provided). If you are one of those students for that particular class, you will be graded on how well you develop your answers, the clarity of your presentation, and how well you engage with your fellow students in eliciting their ideas and points of view. Note that, even if you are presenting, you are STILL expected to turn in the written HW for that class.

You should turn in your homework assignments on time (i.e., by the day of the class). If you cannot, please let me know the reason and we will work out a schedule. Otherwise, I will reduce your homework score by half a grade (for example, from an A to a B+) if it is up to three days late, a full grade (A to B) for up to six days late, and I will mark "incomplete" (equivalent to a 0) for a week or more late. To repeat: If you are assigned to lead a discussion and you have to miss class, you MUST tell me well ahead of time, in order that I can make adjustments. If you fail to do so, I may not be able to make adjustments and you may not receive credit. *If you miss several homework assignments, I will remove you from your team.*

Final Team Project: This integrates all of the course themes into a final team project. Students will form into teams of 3-5 individuals. You should self-select into teams, otherwise I will assign you to a team. Your team will select (or be assigned) one of the topics under discussion in class, e.g., Information, or another relevant topic that I approve.

Each team will research a relevant example (subject to my approval) from anytime in Scientific and Industrial Revolution period, roughly 1700-1900, within that topic area. You will examine individual and collective responsibilities within a global society for that topic area, then draw parallels and potential lessons for the current day. Your team will use proper academic sources for your research (books, journal/newspaper articles, etc.). Your teams will form and select topics by Class 4. In Class 6 your teams will submit to me a proposal describing the project and outlining the specific issues to be covered. This proposal will include details of the team structure and clearly outline who does what. In Class 6 your teams will also present to the class a short (2-minute) brief outlining your proposal, using the template provided. In Class 10 your teams will present to the class a short (5-minute) mid-project review of the project, using the template provided.

Your teams will prepare and present to the class a 20-minute brief (using PowerPoint, video or other media), following the provided guidelines. You will then have a 10-minute

question / answer session with the class. Your teams will submit the presentations to me and make the class presentations during Class 14. Please see instructions for team project.

Administrative Notes:

Closings and cancellations: In the event of inclement weather or another major event, the university announces class cancellation, delay of classes and changes to administrative office hours through the university switchboard, 703-993-1000; the [George Mason home page](#); GMU-TV; and local radio and television stations. If there is any doubt as to the status of the class, contact me. If I need to cancel a particular class, I will contact the students at the earliest possible opportunity.

Emergency Preparedness: In the event of an emergency, we will follow GMU procedures. You may want to register with [Mason Alert](#).

Privacy: Students must use their [GMU email account](#) to receive important University information, including messages related to this class.

Academic Integrity (not just about cheating!): GMU has an [Honor Code](#) with clear guidelines regarding academic integrity: “*Student members of the George Mason University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work*”.

Three fundamental and rather simple principles to follow at all times are:

- (1) Do not plagiarize: all work submitted must be your own (in other words, never cut and paste whole phrases from a book or from the web);
- (2) Give credit when you use someone else’s words: when using the work or ideas of others, including fellow students, give full credit through accurate citations; and
- (3) Ask if you don’t know what to do: if you are uncertain about the ground rules on a particular assignment, ask me for clarification.

Plagiarism is generally thought of as a moral issue – it is dishonest to use someone else’s words as your own, without properly crediting the source. However: an equally important issue is that, when you copy someone else’s words, you are not learning. You are (or someone else is) investing valuable time and resources for you to attend university and learn stuff so you can have a bright future. If you copy and don’t learn, you are wasting your time and that person’s significant contribution to your future. Don’t do it.

Accommodating students with specific needs: If you have a documented learning disability or other condition that may affect your academic performance you should, **at the beginning of the semester:** 1) make sure this documentation is on file with the [Office for Disability Services](#) to determine the accommodations you need; and 2) speak with me to discuss your accommodation needs. Do not wait until the end of semester to do this!!!!

Computers and other electronic devices in class: You are expected to pay attention to and be engaged with what is happening in class, especially when your fellow students are making presentations or discussing readings. You can’t do that while surfing or texting or tweeting. It becomes very obvious to both me and to the class that you aren’t engaged, it shows a lack of respect for your classmates, and it distracts everyone. More importantly,

you are not learning! **Close your laptops and put your tablets and smartphones away.**

Common courtesy and common sense prevails. Use your phones only during breaks, and please do so outside class. Leave your phones on beep or buzz if you need to be available for emergency calls, and take the calls outside of class.

NOTE: This information is subject to change with advance notification to the class.

Class Schedule Calendar – Fall 2022
Wednesday, 4:30pm-7:10pm.
Location: James Buchanan Hall D023

Date	Class Number	Topics
8/24	1	Course introduction
8/31	2	What was the Scientific Revolution?
9/7	3	What was the Industrial Revolution?
9/14	4	Empire building
9/21	5	Energy
9/28	6	Transportation
10/5	7	Industrialization
10/12	8	Reorganizing the workplace
10/19	9	Sanitation
10/26	10	Biology and chemistry
11/2	11	Public health and medicine
11/9	12	Information and communications
11/16	13	When computers were people
11//23	Thanksgiving – no class	
11/30	14	Team project presentations