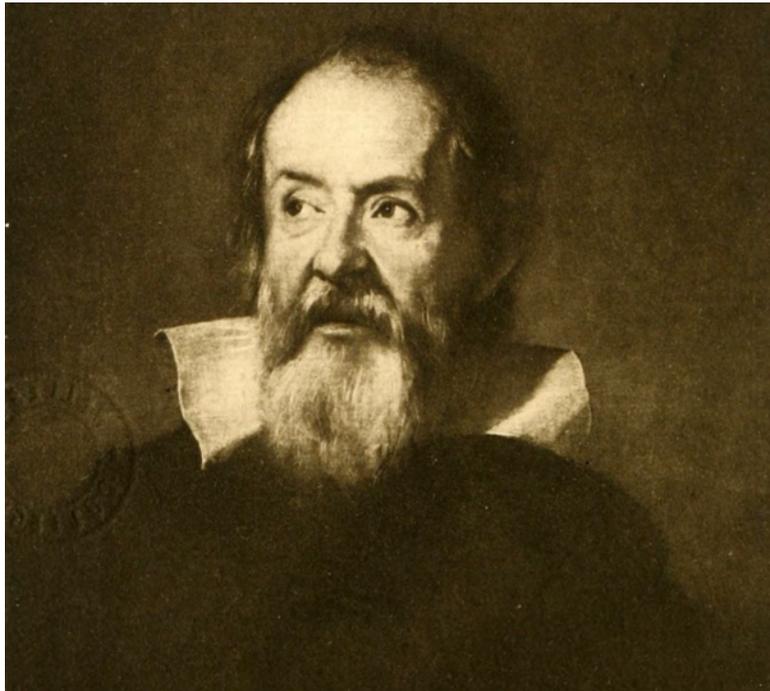


THE SCHOOL OF THE ART INSTITUTE OF CHICAGO
AUTUMN TERM 2017

Scholars Program
First Year Seminar

GALILEO GALILEI

LIBERAL ARTS/ENGLISH 1001-004



Instructor: Daniele MACUGLIA
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Wednesday 1:00 PM – 4:00 PM, Spertus 423A
Office hours: by appointment

BRIEF COURSE DESCRIPTION:

Galileo wasn't just the remarkable scientist we all know for his major contributions to the Copernican Revolution, and for having combined experiments and mathematical methods in a ground-breaking way. He was also an artist, a lutenist, a passionate of Dante and Ariosto, and a man of letters. His farsighted intuitions, his eloquent writing style, along with his ability to use *chiaroscuro* and to handcraft scientific instruments, helped him stand out in the cultural environment of his time, providing him with an effective tool for pondering, developing, and conveying scientific ideas. In this course, we will explore Galileo's life and scientific works with a special eye to his art and literature. More specifically, we will ponder the way in which Galileo's artistic and humanistic skills might have played a role in forging a precise scientific discourse, and the way in which such a discourse affected, in turn, his literary and artistic production. Intensely focused on Galileo's original writings, this course is intended for students interested in the sciences, social sciences, arts, and humanities. Particularly welcome are students of Italian language and literature who seek to practice and enhance their Italian skills by reading Galileo in his original language.

COURSE OBJECTIVES:

By the end of the quarter, students will have acquired the following skills:

- 1) Students will be able to identify some of the most salient aspects of Galileo's life and scientific contributions and will know how to analyze his major writings and produce arguments about their historical value and significance.
- 2) Students will be acquainted with the role played by the arts and letters in forging Galileo's thinking, and will ponder the way in which his scientific mind, in turn, might have forged a precise literary style. From this perspective, students will learn how to precisely situate Galileo in the cultural environment of his time without making anachronistic mistakes, and without attributing to his works meanings and connotations that a rigorous historical analysis would prove to be inaccurate.
- 3) Students will be able to analyze the causality existing between science, art, and literature, and will learn how to build arguments about their relations. Some room will be left for analyzing the way in which science, art, and literature are developing within our society, and for pondering the relevance that a humanistic/artistic discourse might have in our own society, where only scientific and technological cultures seem to have a real impact in shaping our lives and lifestyles.

COURSE REQUIREMENTS:

PARTICIPATION AND READING ASSIGNMENTS

Class attendance is a mandatory component of the enrollment in this course. At the beginning of each class, students will be responsible for signing a sign-in sheet located at the classroom entrance.

A set of "Mandatory Readings" will be assigned for each class: students are required to thoroughly examine these readings at home and be ready to discuss them in class. Other readings will be "Optional Readings" and will be offered to complement some of the topics we will be focusing on in class. Students may decide to do the Optional Readings according to their own interest. There will also be occasional and optional "In-Depth Analyses"—a focus on a series of dedicated topics that are relevant for understanding the Mandatory Readings but that are not directly part of them. This may be the case, for example, of a general overview of the Roman

Inquisition, a focus on the House of Medici, etc. Students are required to actively participate in class discussions by asking questions and sharing their thoughts and ideas.

CLASS PRESENTATIONS, READING RESPONSES, FINAL PAPERS

Each student is required to:

- 1) Deliver two class presentations;
- 2) Write two reading responses;
- 3) Write a 10- to 15-page final paper.

A) CLASS PRESENTATIONS. Students will be required to deliver two class presentations. Students may choose to present a Mandatory Reading or an In-Depth Analysis. A presentation calendar will be defined on Wednesday, August 30 and class presentations will start on Wednesday, September 6. Presentations will be assigned in a first-come, first-served basis, but also considering students' specific interests.

- Presentation of Mandatory Readings: As a general reference, Mandatory Readings will be divided into primary sources and secondary sources. Students delivering a class presentation of a Mandatory Reading are requested to 1) focus on a summary of the reading of their choice, 2) analyze what they consider to be the most significant passages of it, 3) engage the rest of the class in a class discussion by raising one or two questions suitable for a class debate. Weekly readings and reading lengths have been chosen in such a way that the presentation of primary and secondary readings will all require the same amount of work. As a general reference, primary sources may be slightly more difficult to approach than the secondary literature and, in compensation, primary readings may be shorter than the secondary readings.

- Presentation of In-Depth Analyses: Students may choose to present an In-Depth Analysis if and only if another student is already presenting the Mandatory Reading assigned for that day. In other words, Mandatory Readings must be chosen first! In-Depth Analyses entail the focus on a "more general topic," not restricted to the specificity of the Mandatory Readings. In compensation, students presenting In-Depth Analyses will be requested to choose an authoritative set of sources (either primary or secondary sources), and to conduct a short independent research. One week before presenting an In-Depth Analysis, interested students must email a list of sources to the instructor and have it accepted before proceeding. As a general reference, it may be appropriate to consult at least two secondary sources and at least one primary source. Also in the case of In-Depth Analyses, the proposed topics and the composition of independent research are chosen in such a way that the presentation of Mandatory Readings and In-Depth Analyses will all require the same amount of work.

Each presentation—both of Mandatory Readings and In-Depth Analyses—should last approximately thirty minutes (twenty minutes for presenting and commenting the reading materials, and about ten minutes for questions and to start a class discussion led by the instructor). Students may decide to read their own class presentations and to prepare a Power Point presentation. A PC, a Mac adapter, and a projector will all be available in the classroom. As a general rule, group presentations are not allowed, and each student will be assigned to a single presentation.

B) READING RESPONSES. On Wednesday, October 4 and on Wednesday, November 8 students will turn in in class a three-page reading response (about 1000 words, double-spaced, Times New Roman, 12) focusing on the primary readings scheduled for that week. In each reading response, students will be asked to select and elaborate on passages taken from the primary literature that highlight the specific theme of that particular week. Students are required to creatively elaborate on the specific readings they will focus on, and will focus on one question of their choice that students want to analyze in class discussion. The questions students will choose may be related to an issue that the readings do not explicitly cover, to a curiosity, or to something that may require more research to be answered in a satisfactory way. Students are supposed to choose their own questions and to attempt an answer to such question by analyzing relevant passages taken from the primary and secondary sources under considerations. Reading responses should not be summaries of the reading material, but students can briefly summarize specific passages in as much as this is necessary for them to develop their argument. Reading responses must be printed and turned in on Monday, October 5 and on Monday, November 9 respectively. Students will have the opportunity to revise their reading responses, and grades for the reading responses will be assigned after the first revision will be completed. Revised papers must be turned in on Wednesday, October 18 and on Wednesday, November 22.

C) FINAL PAPER AND WRITING FELLOWS. Final papers should never be summaries of the primary and secondary sources: students are supposed to directly elaborate on material taken from the primary sources discussed in class, trying to fill in a gap or readdress possible misleading assumptions of the secondary studies. Students might also decide to focus on an empirical component such as an archival research on scientific manuscripts, a set of interviews with historians inside or outside campus, or the analysis of academic journals on the Renaissance culture, etc. The instructor will help to propose a possible topic and will provide the students with suggestions to engage with a specific issue. Each final paper should include:

- (1) the precise question the student seeks to answer;
- (2) an explanation of why this question is important;
- (3) a brief description of the primary and secondary sources intended to be used, and an account of the methodology of research the student intends to undertake;
- (4) a thorough elaboration of the problem under consideration, by making use of both primary and secondary sources.

For example, students might want to focus on the humanistic environment in which Galileo grew up. By looking at the biographies written by Galileo's contemporaries—like the one by Vincenzo Viviani (1622-1703) in *Racconto Storico della Vita di Galileo* (*Historical Narration of Galileo's Life*, 1654) and the one by Niccolò Gherardini (1604-1678) in *Vita del Signor Galileo Galilei* (*The Life of Mr. Galileo Galilei*, 1653-54)—and by delving into Galileo's correspondence and scholarly studies, students might want look at Galileo's relationship with his father Vincenzo (1520-1591) and his younger brother Michelangelo (1575-1631). Both Vincenzo and Michelangelo were renowned lutenists who shaped the early stages of the Baroque style in music. Michelangelo, more in particular, was a *virtuoso* particularly influential in southern Germany and Poland. Interestingly enough, Galileo did not adhere to the Roman Baroque, and was a kind of anomalous case inside the growing extravagancies of the artistic and humanistic movement that was developing in Rome when he was still a young man. Why was Galileo at the same time so similar with (in terms of a shared humanistic background) and different (in terms of his distances from the Roman Baroque) from his father and brother? And why was he so anomalous as a man of science and letters in the late-Renaissance tradition? Final papers are intended to elaborate on

questions such as the previous ones, and students are encouraged to meet with the instructor for clarification and assistance.

After the general topic has been chosen, students are required to work together with their Writing Fellow to write their final papers. Writing Fellows will help students writing their final papers. **The Writing Fellow for our seminar is Emily Duggan (eduggan@saic.edu)** and each student is required to meet with her at least twice over the course of the quarter. Failing to meet with the Writing Fellow may cause a student to fail the course. Student will get in touch and meet with the Writing Fellow at least one time between Monday, October 30 and Friday, November 3 (to get a tentative structure of their essays) and one time between Monday, December 4 and Friday, December 8 (to work on the first draft of their papers and get ready to write the final version of their essays). On Wednesday, November 15 students will have the chance to present in class their proposed projects (as well as the structure of their papers) and receive a feedback from the instructor and the other students.

All of the final papers have to adhere to the APA citation style (specific instructions will be given in class and can be found on Canvas too). Final papers must be double-spaced (Times New Roman, 12) and must be submitted to the instructor as an email attachment (only .doc, .docx, .pdf files will be accepted) by Friday, December 22, 2017 at 5:00 PM (Chicago time). Late submissions will incur a 10% grade reduction for each day late. Papers that do not respect the word limit will also incur a 10% grade reduction.

COMPOSITION OF THE FINAL GRADE:

Participation: 28 points (2 points per class; the first class does not count toward the grade)

Reading Responses: 20 points (10 points per reading response).

Class Presentations: 50 points (25 points per presentation).

Final Paper: 60 points

- Problem specified at the beginning of the essay: 2 points
- Relevance is justified (why should we care about this problem?): 2 points
- The methodology of research is clearly described: 2 points
- Collection and analysis of historical data (primary sources): 30 points
- Analysis of the relevant secondary work: 18 points
- The final paper is grammatically and syntactically correct: 6 points

TOTAL: 158 points.

To pass the course students have to come to class, actively participate in class discussions, do your class presentations, write both reading responses and the final paper on time. Students will also have to meet with the Writing Fellow twice over the course of the term. 125 points is the score expected for a successful student to pass the class. Please be on time and try to meet all the deadlines.

COURSE MATERIALS AND SCHEDULE:

Students will have to buy the following books:

- (1) Stillman Drake, *Galileo at Work: His Scientific Biography* (Chicago: The University of Chicago Press, 1978). We will use the 1995 Dover Publications edition. Please consider: <https://www.amazon.com/Galileo-Work-His-Scientific-Biography/dp/0486286312>.
- (2) Stillman Drake, ed., *Discoveries and Opinions of Galileo* (New York: Anchor Books, 1957). We will use the 24th edition of the book. Please consider: https://www.amazon.com/Discoveries-Opinions-Galileo-Galilei/dp/0385092393/ref=sr_1_1?ie=UTF8&qid=1503819619&sr=8-1&keywords=Discoveries+and+Opinions+of+Galileo

A variety of additional readings will be uploaded to Canvas.

Week 1:

COURSE OVERVIEW AND INTRODUCTION

Wednesday, August 30, 2017

Week 2:

THE BACKGROUND

Wednesday, September 6, 2017

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapters 1-4, pp. 1-73;
- (2) [MANDATORY] Paula Findlen, "Understanding the Italian Renaissance," in Paula Findlen, ed., *The Italian Renaissance: Essential Readings* (Oxford: Blackwell, 2002), pp. 4-45;
- (3) [OPTIONAL] John Heilbron, *Galileo* (Oxford: Oxford University Press, 2010), pp. 1-27;
- (4) [IN-DEPTH ANALYSIS] "Tuscany in the Italian Renaissance: a practical overview;"
- (5) [OPTIONAL] H. Floris Cohen, "Beats and the Origins of Early Modern Science," in Victor Coelho, ed., *Music and Science in the Age of Galileo* (Springer: Dordrecht, 1992), pp. 57-72.

Week 3:

MOTION, INERTIA, TRAJECTORIES

Wednesday, September 13, 2017

Primary Literature:

- (1) [MANDATORY] Nicolaus Copernicus, *De Revolutionibus Orbium Coelestium (On the Revolutions of the Heavenly Spheres, 1543)* translation and comments by Edward Rosen, ed., *On the Revolutions of the Heavenly Spheres* (Baltimore: Johns Hopkins University Press, 1978), pp. 13-22.

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapters 5-7, pp. 74-133;
- (2) [IN DEPTH-ANALYSIS] "The idea of motion according to Aristotle."

Week 4:

THE TELESCOPE

Wednesday, September 20, 2017

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapter 8, pp. 134-156;
- (2) [IN-DEPTH ANALYSIS] "A brief history of the telescope with insights on how different kinds of telescopes work;"
- (3) [MANDATORY] Mario Biagioli, "Replication or Monopoly? The Economies of Invention and Discovery in Galileo's Observations," *Science in Context* 13, 3-4 (2000), pp. 547-590.

Week 5:

THE STARRY MESSENGER

Wednesday, September 27, 2017

Primary Literature:

(1) [MANDATORY] Galileo Galilei, *Sidereus Nuncius* (The Starry Messenger, 1610) translated and reprinted in Drake, *Discoveries and Opinions*, Introduction to the First Part and The Starry Messenger, pp. 1-58;

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapter 9, pp. 157-176;

(2) [OPTIONAL] John Heilbron, *Galileo* (Oxford: Oxford University Press, 2010), pp. 143-199.

Week 6:

LETTERS ON SUNSPOTS

Wednesday, October 4, 2017

Primary Literature:

(1) [MANDATORY] Drake, *Discoveries and Opinions*, Introduction to the Second Part, pp. 59-86, then pick a letter of your choice after reading Drake, *Galileo at Work*, Chapter 11. For the letters on sunspots, please consider Drake, *Discoveries and Opinions*, pp. 87-144.

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapters 10-12, pp. 177-230;

(2) [OPTIONAL] Mario Biagioli, "Picturing Objects in the Making: Scheiner, Galileo and the Discovery of Sunspots," in Herausgegeben von Wolfgang Detel and Claus Zittel Frankfurt, eds., *Ideals and Cultures of Knowledge in Early Modern Europe* (Berlin: Akademie-Verlag, 2002), pp. 39-96.

First Reading Response due in class

Week 7:

LETTER TO THE GRAND DUCHESS CHRISTINA

Wednesday, October 11, 2017

Primary Literature:

(1) [MANDATORY] Galileo Galilei, *Lettera a Madama Cristina di Lorena Granduchessa di Toscana* (Letter to Madame Christina of Lorraine Grand Duchess of Tuscany, 1615) translated and reprinted in Drake, *Discoveries and Opinions*, pp. 173-216. Before reading the Letter to Christina of Lorraine, please read Drake, *Discoveries and Opinions*, Introduction to the Third Part, pp. 145-172.

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapter 13, pp. 231-251;

(2) [OPTIONAL] Maurice Finocchiaro, *The Galileo Affair* (Berkeley & Los Angeles: University of California Press, 1989), pp. 27-86.

Week 8:

THE ASSAYER – PART 1

Wednesday, October 18, 2017

Primary Literature:

(1) [MANDATORY] Galileo Galilei, *Il Saggiatore* (*The Assayer*, 1623) excerpts translated and reprinted in

Drake, *Discoveries and Opinions*, pp. 229-254. Please read also Drake, *Discoveries and Opinions*, Introduction to the Fourth Part, pp. 217-228.

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapters 14-15, pp. 252-288;
- (2) [OPTIONAL] John Heilbron, *Galileo* (Oxford: Oxford University Press, 2010), pp. 231-257.

First Reading Response due in class (corrected version)

Please contact our Writing Fellow and schedule a meeting between Oct. 30 and Nov. 3

Week 9:

THE ASSAYER – PART 2

Wednesday, October 25, 2017

Primary Literature:

- (1) [MANDATORY] Galileo Galilei, *Il Saggiatore* (*The Assayer*, 1623) excerpts translated and reprinted in Drake, *Discoveries and Opinions*, pp. 255-282.

Secondary Literature:

- (1) [OPTIONAL] Stillman Drake, *Essays on Galileo and the History and Philosophy of Science* (Toronto, Buffalo, London: University of Toronto Press, 1999), Vol. 1, pp. 63-89;
- (2) [IN-DEPTH ANALYSIS] “The Inquisition at the time of Galileo;”
- (3) [OPTIONAL] Drake, *Essays on Galileo*, Vol. 1, pp. 153-167.

Week 10:

DIALOGUE – PART 1

Wednesday, November 1, 2017

Primary Literature:

- (1) [MANDATORY] Galileo Galilei, *Dialogo Sopra i Due Massimi Sistemi del Mondo* (*Dialogue Concerning the Two Chief World Systems*, 1632) translated and reprinted in Maurice A. Finocchiaro, ed., *Galileo on the World Systems* (Berkeley: University of California Press, 1997), pp. 77-141.

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapter 16, pp. 289-305;
- (2) [MANDATORY] Paula Findlen, “The Sun at the Center of the World,” in *The Renaissance World*, ed. John Martin (New York: Routledge, 2007), pp. 655-677;
- (3) [OPTIONAL] Mario Biagioli, *Galileo, Courtier: The Practice of Science in the Culture of Absolutism* (Chicago & London: The University of Chicago Press, 1993), pp. 313-353.

Week 11:

DIALOGUE – PART 2

Wednesday, November 8, 2017

Primary Literature:

- (1) [MANDATORY] Galileo Galilei, *Dialogo Sopra i Due Massimi Sistemi del Mondo* (*Dialogue Concerning the Two Chief World Systems*, 1632) translated and reprinted in Maurice A. Finocchiaro, ed., *Galileo on the World Systems* (Berkeley: University of California Press, 1997), pp. 142-220.

Secondary Literature:

- (1) [MANDATORY] Drake, *Galileo at Work*, Chapter 17, pp. 306-329;

(2) [OPTIONAL] Stillman Drake, ed., *Galileo on the World Systems* (Berkeley: University of California Press, 1997), pp. 47-69.

Second Reading Response due in class

Week 12:

THE TRIAL

Wednesday, November 15, 2017

Primary Literature:

(1) [MANDATORY] Original documents taken Maurice Finocchiaro, *The Galileo Affair* (Berkeley & Los Angeles: University of California Press, 1989), pp. 256-292.

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapters 18-19, pp. 330-372;

(2) [OPTIONAL] Mario Biagioli, *Galileo, Courtier. The Practice of Science in the Culture of Absolutism* (Chicago & London: The University of Chicago Press, 1993), pp. 313-35;

(3) [OPTIONAL] Paula Findlen, "Rethinking 1633: Writing the Life of Galileo after the Trial," in Mario Biagioli and Jessica Riskin, eds., *Nature Engaged: Science in Practice from the Renaissance to the Present* (London: Palgrave, 2012), pp. 205-226;

(4) [OPTIONAL] John Heilbron, *Galileo* (Oxford: Oxford University Press, 2010), pp. 296-328.

Week 13:

TWO NEW SCIENCES

Wednesday, November 22, 2017

Primary Literature:

(1) [MANDATORY] Galileo Galilei, *Discorsi e Dimostrazioni Matematiche Intorno a Due Nuove Scienze Attinenti alla Meccanica e ai Moti Locali* (*Discourses and Mathematical Demonstrations Relating to Two New Sciences*, 1638), translated and reprinted by Stillman Drake in Stillman Drake, ed., *Two New Sciences Including Centers of Gravity and Force of Percussion*, 2nd ed. (Madison: University of Wisconsin Press, 1974), pp. 147-178; pp. 217-241.

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapter 20, pp. 373-393;

(2) [IN-DEPTH ANALYSIS] "The science of materials in the *Two New Sciences*."

Second Reading Response due in class (corrected version)

Please contact our Writing Fellow and schedule a meeting between Dec. 4 and Dec. 8

Week 14:

THE LAST YEARS

Wednesday, December 6, 2017

Secondary Literature:

(1) [MANDATORY] Drake, *Galileo at Work*, Chapter 21-22, pp. 394-436;

(2) [MANDATORY] Stillman Drake, *Galileo: Pioneer Scientist* (Toronto: University of Toronto Press, 1990), Chapters 15-16, Kindle edition;

(3) [OPTIONAL] John Heilbron, *Galileo* (Oxford: Oxford University Press, 2010), pp. 329-365;

(4) [OPTIONAL] Stillman Drake, ed., *Galileo on the World Systems* (Berkeley: University of California Press,

1997), pp. 47-69;

(5) [OPTIONAL] Owen Gingerich, “Kepler, Galilei, and the Harmony of the World,” in Victor Coelho, ed., *Music and Science in the Age of Galileo* (Springer: Dordrecht, 1992), pp. 45-63.

Week 15:

GALILEO TODAY

Wednesday, December 13, 2017

Primary Literature:

(1) Students will focus on a variety of works of art, music, popular culture, movies, etc... There will be some short class presentations and a discussion to follow.

Final Paper due on December 22 (via email)