



The Ascent of Man

An Introduction to the History of Science

CITY UNIVERSITY OF NEW YORK
DEPARTMENT OF HISTORY
HERBERT H. LEHMAN COLLEGE
FALL SEMESTER, 2024

HIS 239–A01: THE ASCENT OF MAN AN INTRODUCTION TO THE HISTORY OF SCIENCE

Faculty Name: Prof. Joseph W. Dauben

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Office Hours: Wednesdays, 2:00–3:00 PM (by appointment); Credits: 3; Pre-requisites: None

COURSE DESCRIPTION

HIS 239–A01: The Ascent of Man. 3 hours. 3 credits.

Exploration of the events and people who have contributed to the technological and scientific progress of civilization from ancient times to the present. Weekly writing assignments, formal essays, and Internet research explore the role of science and technology in world history.

Writing Intensive; Requirement Designation: Flexible Core - Scientific World

WELCOME to HISTORY 239–A01: “The Ascent of Man: An Introduction to the History of Science.”

Although the history of science is an immense field of study, with its origins in antiquity, encompassing the natural and physical sciences, mathematics, astronomy, medicine and all closely related to the history of technology, this course, which is based on a book and a television series by Jacob Bronowski entitled “The Ascent of Man,” is designed to provide you with a good, basic overview of the subject.

This class will use Blackboard to share Course Materials and Documents, Submit Assignments and Communicate with you. Please check your **LEHMAN COLLEGE** e-mail frequently. I will communicate with you via the **Announcements** in Blackboard that will send an e-mail to your Lehman College e-mail address. Click [HERE](#) to learn how to update your e-mail address in Blackboard. It is very important that you complete the following activities before the course is due to begin on August 28, 2024.

1. Make sure you have [Adobe Acrobat Reader](#), Microsoft Office installed. Look for the INSTALL SOFTWARE link to download a FULL VERSION of MS Office FREE in your student e-mail.
2. Read and print the syllabus. Read and print the Writing Assignments due dates.
3. Explore the information and links under "Course Information."
4. Go to "Weekly Assignments" and read the assignments for the first week to get started.

To be successful in your studies, you have to be self-motivated to get the work done. My advice is to dedicate three or four blocks of time every week to work on this course. The following website (University of Illinois) may be helpful: [What Makes a Successful Online Student?](#)

However, A WORD TO THE WISE: This course involves a considerable amount of writing. That is the nature of on-line courses—writing is our basic means of communication. But the trade-off is that I do not intend to give either a mid-term or final examination. The quality of your work will be reflected in the weekly writing assignments, and in three short essays (5-6 pages), one due in October, November, and December. There is also an opportunity to earn points each week through the Blackboard discussion forums for each of the weekly assignments. All of this is explained in more detail under "Course Information."

Those who finish the course find it rewarding, informative and rigorous. But some students do not complete the course, largely because they fall behind in the assignments and then find it very difficult to



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catch up. My advice is to work at least one week ahead of schedule, so that if you find yourself in a week that is full of other demands on your time, other course deadlines or exams, you won't then find yourself behind in this course. If you meet the weekly deadlines, you should have no trouble doing well in this course. And the secret to doing well is to keep on schedule, and not fall behind.

I look forward to meeting everyone in the first forum of the fall term. If you have any questions about the course, you can post them in the "Open Forum" on the course Discussion Board throughout the semester.

COURSE GOALS AND OBJECTIVES

The primary objective of this course is to acquaint students with the events and people—some famous, some not so well known—who have contributed to the technological and scientific progress of civilization from ancient times to the present. It is also an objective of this course to offer intensive opportunities for students to improve their writing skills and use of English, as well as to become familiar with the rich resources for study and research made possible by access to the World Wide Web. Through a combination of weekly writing assignments and exploration of internet resources, students should find that their knowledge of the history of science and its significance for subsequent world history is deepened, and their skills by which to express their knowledge correspondingly enhanced.

COURSE REQUIREMENTS

Students enrolled in HIS 239–A01: "The Ascent of Man" will be expected to complete all assigned course work in a timely fashion. In addition to weekly reading and writing assignments, the course includes Blackboard discussion sessions in weekly forums, and three essays, the first due in October, then November, with a final essay in December, for which detailed instructions will be issued well in advance of their due dates. There are NO examinations for this course; the amount of writing you will be doing week-by-week more than compensates for the lack of either a mid-term or a final examination. All students are required to familiarize themselves with the Plagiarism Guidelines and to submit in writing a signed copy of the Honor Code Affirmation before the end of the first week of the semester (again, see Course Documents for details). For information about how your work will be evaluated, see "Grading Policy and Procedures" below.

WEEKLY ASSIGNMENT POSTINGS

HIS 239–A01: "The Ascent of Man," begins on August 28, 2024, and will end on December 21. The first three reading and writing assignments are already posted, and on Monday of each week, a new week's assignments will be posted. Each week there will be two writing assignments, the first a short Descriptive Writing Assignment (due on Mondays, unless Monday is a holiday), the second a slightly longer, usually not more than a page or two, Analytical Writing Assignment (due Thursdays). The writing assignments for the week of September 2 are due on Monday, September 3 (because Monday is a holiday) and Thursday, September 5. Throughout the course of the semester, you should make every effort to complete your writing assignments well before they are due. There is a grace period of one week, after which the assignment will no longer be available, and it will not be possible to make further postings of assignments for that week. Each Descriptive Writing Assignment is worth 10 points toward your final grade (a maximum of 5 if posted late), and each Analytical Writing Assignment is worth 20 points (a maximum of 10 if posted late). For further details about grading for the course, see "Grading Policy and Procedures" below.



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WATCHING *THE ASCENT OF MAN*

This course is based upon the BBC television series by Jacob Bronowski, *The Ascent of Man*, and the book by the same title. The videos for the series are entirely available on-line, and you should plan to watch each episode as scheduled week by week (on reserve in the Lehman College Art Library on the second floor for the Lief Library, and also available on-line). It would be best to look briefly at each chapter of *The Ascent of Man* to familiarize yourself with their contents before watching the video assigned for each week. You should also read the weekly writing assignments before watching a given episode. You can then go back to read the assigned chapter in more detail as you work on each week's writing assignments. Your enjoyment of this course will be greatly enhanced if you make sure to watch each episode of *The Ascent of Man* as you read the book and are working on individual assignments throughout the semester.

PLAGIARISM AND HONOR CODE

Please see the section under Course Documents related to Plagiarism and the Honor Code.

All students in this course should complete the Honor Code Affirmation document and post it in the folder for "Plagiarism Forms" on the course Discussion Board no later than Tuesday, September 3. Ten points of extra credit will be added towards your final grade as soon as the form is submitted. No grades will be posted for any work until your plagiarism form has been submitted.

GRADING POLICY AND PROCEDURES

There are multiple components to the grade you will earn for taking this course. I am interested in seeing your mastery of the contents of the course, based upon your reading and discussion of the assigned readings, and in the improvement of your writing over the course of the semester. Full details concerning how grades are determined for all components of this course are described in this folder. For more about the role and importance of writing in this course, see "Good Writing" below.

GRADING

Final grades for HIS 239–A01: "The Ascent of Man" are based upon an accumulation of points for each assignment, including twice-weekly writing assignments (14 "descriptive" writing assignments and 14 "analytical" writing assignments), three monthly essays (and the drafts for each of these essays), and extra points for participating in the weekly discussion of the descriptive and analytical writing assignments. For a summary, see the "Quick Guide to the Grading Point System" described below.

The breakdown of actual point awards will be as follows:

Every descriptive writing assignment is worth a maximum of 10 points. These are due every Monday (or on Tuesday if Monday is a holiday). Every weekly analytical writing assignment is worth a maximum of 20 points, and these are due every Thursday. Assignments may be posted after the due date, but for a maximum of only 5 points per descriptive writing assignment and 10 points per analytical writing assignment. The folder for each week's assignments will be closed at the end of the week following their due dates (in the case of the first week's assignments due the week of September 2, this would mean midnight Sunday, September 8, to submit them for partial credit). If you miss the final deadline for any given weekly writing assignment, there is no way to make up for the loss of points. Similarly, points for discussion are awarded at the end of each week, at which point I will post a summary comment recapping



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the week's discussion, usually no later than Monday following the previous week's assignments, when a new week's worth of postings and discussion should begin. Thereafter, no further discussion points for the previous week will be awarded.

Additional points: To encourage discussion of the weekly postings on the Discussion Board, each week you can earn a maximum of an additional 10 points based upon the number and quality of notes you post commenting on the work others in the class have posted each week. The questions and comments you post to the work of your fellow classmates can add as many as an additional 140 points to your overall grade. This is not for "extra credit" but again, is considered an integral part of your participation in this course. As soon as you post an assignment you will receive half-credit for that assignment; full credit will be added as soon as you have participated in that week's discussion on the course Discussion Board and depending upon the quality of your response to that particular writing assignment.

Beginning in October, each month there will be a major writing assignment, upon which a substantial part of the course grade will depend. A draft of the first monthly essay assignment will be due on Sunday, October 6, and is worth a maximum of 50 points; the final revised version of the October essay assignment is due on Sunday, October 20, and is worth a maximum of 100 points. The second monthly essay assignment is due in draft on Sunday, November 3, and is worth a maximum of 50 points; the final revised version of the November essay assignment is due on Sunday, November 17, and is worth a maximum of 150 points. The draft of the third monthly essay assignment is due on Sunday, December 1, and is worth a maximum of 50 points; the final revised version of the December essay assignment is due on Sunday, December 15, and is worth 200 points. (Previously, the drafts and rewritten versions of the three essay assignments were due on Fridays, but my students last semester convinced me that they wanted the weekend to work on their essays, and I've followed this principle again this semester. If you can possibly post your essay before the weekend, that will mean you can relax rather than work, which was why I used to set Fridays as the due-date.)

Each of the Monthly Essay Assignments will be graded on multiple factors, including:

Content (C), representing your ideas and the persuasiveness of your arguments;

Research (R), reflecting the extent and use you make of quoted material and other references;

Organization (O), including how you begin your essay, how you bring it to a conclusion, as well as the logical progression of your ideas;

Quality (Q) of writing, relating to structural elements like expression, use of words, effective vocabulary, and grammar; and

Style (S), meaning the appearance of your essay, whether you have correctly formatted footnotes and bibliography, and paid proper attention to surface elements like correct spelling and punctuation

The actual breakdown for each of these elements is as follows (C, R, O, Q, S)

October Essay: 100 points = (50, 20, 10, 10, 10) points

November Essay: 150 points = (75, 30, 15, 15, 15) points

December Essay 200 points = (100, 40, 20, 20, 20) points

Nota Bene (Note Well): Although in each case, the essays will be graded with the quality of your ideas and the arguments uppermost in mind, the importance of writing correctly—paying proper attention to the presentation of your ideas—plays an increasing part in your grade. By the end of October, you should have overcome any problems with the surface presentation of your work, and errors due to careless formatting, footnoting, referencing, grammar and spelling should be minimal. Late monthly essays will be subject to a 10% reduction in the total points awarded the essay for each week that the essay is late, up to a maximum of a 50% penalty.



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The overall breakdown of point categories:

Weekly descriptive writing assignments (14): 140 points

Weekly analytical writing assignments (14): 280 points

October Essay: draft 50 points; final revised essay 100 points

November Essay: draft 50 points; final revised essay 150 points

December Essay: draft 50 points; final revised essay 200 points

Discussion Board Participation: worth a maximum of 140 points)

Total maximum points for the term: 1170 (including 10 points upon positing your plagiarism form)

At any point during the course, you can find out exactly how many points you have accumulated toward your final grade. If you are concerned about how final grades will be distributed, you can also follow the following minimal guidelines (i.e. if you accumulate at least the following number of points, you can expect the following final grade):

Quick Guide to the Grading Point System

1050-1170 = A

975-1049 = A-

925-974 = B+

875-924 = B

825-874 = B-

775-824 = C+

700-774 = C

600-699 = C-

500-599 = D

0-499 = F

GRADING THE WEEKLY WRITING ASSIGNMENTS

Each week there are two writing assignments, a shorter Descriptive Writing Assignment worth 10 points, and a longer Analytical Writing Assignment worth 20 points toward your final grade. These will be graded based upon how completely you answer the questions and how well your answers reflect your understanding of the assigned readings week-by-week.

GOOD WRITING

Good writing does not come easily and is the product of careful preliminary reading and organization, followed by attention to details, rewriting, and perhaps further research, reading, and rewriting before a satisfactory draft may be ready for others to read. Do not leave your writing to the last minute, but begin when your reading or new ideas are fresh in your mind. Even if you only have time for a very hasty first writing, you can always revise later. Before posting any of your work for this course, always check it for acceptable grammar, correct spelling, and proper punctuation. Good ideas deserve to be expressed as clearly as possible. To do so, you do not need to write long, complex sentences. Short, clear statements



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of the points you wish to make will be more successful in getting your ideas across than verbose and overly-elaborate essays. The more you give yourself time to revise your writing, return to it on several occasions, keeping a reader who has not seen your work before in mind, the better your writing is likely to be. Also, take advantage of the Lehman College Instructional Support Services Program [<http://www.lehman.edu/academics/instructional-support-services/index.php>] and/or the [CUNY On-line Writing Site](#). And finally, there is no better guide to good writing than reading—reading the best literature that interests you. The more you read, and the better the quality of what you read, the better you will write.

HOW TO GET AN “A” IN HIS 239 A01W: “THE ASCENT OF MAN”

There is no secret about how to do well in this course. Do all the reading when it is assigned. Do not put off your writing until the last minute. If you read each assignment carefully before you start reading, and then read with the assignment in mind, taking notes (whether for the weekly writing assignments, or for each of the three monthly Essay Assignments for October, November, and December), you should have the makings of a well-organized essay. If you also participate in the weekly discussion forums, and ask questions if you find any of the reading material or the writing assignments unclear, you should make steady progress as the course builds on what you have already learned. I am primarily interested in seeing that you have a firm grasp of the material covered in this course, along with clear signs of improvement in your work as the term progresses.

TASK MANAGEMENT

You should update your “Tasks” page on a regular basis (this may be found under “Tools”), indicating the status of the Tasks you have set for yourself from the Course Assignments page, and noting the status of your Course Assignments, whether you are just beginning, still working, about to finish, or have completed the Task or Assignment in question. Every week there will be a “Descriptive Writing Assignment” usually due on Mondays, and an “Analytical Writing Assignment” due on Thursdays. For example, you should regularly set for yourself the weekly task of completing the analytical writing assignment, e.g., the Week I assignment is due to be posted by midnight, Thursday, September 5. It would be wise to work on the assignment during the week, and post your work on Tuesday or Wednesday, if at all possible. You should then find time no later than Friday to read and respond to the work posted by everyone else in the course. Depending upon the extent and quality of your contributions to the questions/discussion, you can earn an additional 10 points each week toward your final grade. Thus, it would be best to set your own task due-dates several days ahead of the actual deadlines, to be sure that you complete them on time. There is a one-week grace period for submitting descriptive and analytical writing assignments for partial credit; folders will remain open for one week after each due date for discussion, after which the folder will be closed and no longer available. If you have the time and wish to work ahead, you may do so one or two weeks in advance (new assignments will be posted every Monday), but weekly assignments will not be posted more than two weeks in advance of their due date. Reminders about the due dates for the three monthly Essay Assignments (October, November, and December) will be posted by the instructor, but it is up to students in the course to keep track of their weekly Task assignments.



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DUE DATES FOR WEEKLY WRITING ASSIGNMENTS

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PLAGIARISM AND HONOR CODE

Plagiarism Guidelines and Honor Code Affirmation (required of all students)

Please read the detailed description of plagiarism provided by the Director of Undergraduate Studies for students in the English Department at the University of Michigan: [Michigan Plagiarism Document](#). The definitions provided there and the concerns expressed are equally applicable to the written work any of us do, and will be applied with like gravity and equal seriousness to students participating in HIS 239–A01: “The Ascent of Man.” After reading what Michigan’s Department of English has to say about plagiarism, please summarize *in your own words* the major points it makes. You should begin with a brief definition of what plagiarism means, and then describe succinctly the various forms it can take. You should do this in no more than one or two paragraphs. Then down-load the page you can access by clicking on the link “LC AoM Plagiarism Form Fall 2024” on the course website and insert what you have written prior to the affirmation, which will constitute your one-page document on plagiarism. Then type in your name at the bottom of the form, thereby acknowledging that all work you submit for this course will be your own, and that all works consulted, copied, quoted, cited, or summarized in any way will be duly acknowledged.

This includes an affirmation that you will not use any AI programs (like ChatGPT) to enhance your writing and that all work submitted shall be your own. Please keep in mind that this is a Writing Intensive course, one purpose of which is to improve your own writing skills. You should post your completed document in the folder for “Plagiarism Forms” on the course Discussion Board (preceding the folder for “Self Introductions”). You should post your form no later than Tuesday, September 3, when the first writing assignment in the course is due. **No grades will be posted for any student in this course until your signed plagiarism form has been submitted.**

ATTENDANCE POLICY

The *Student Handbook* notes that “Students are expected to attend all class meetings as scheduled, and are responsible for all class work missed as a result of late registration or absence. Excessive absences in any course may result in a lower final grade.” While this is an asynchronous on-line course, there are no in-class meetings but students are expected to complete the weekly writing assignments on time, and to submit their written work by the deadline due-dates as specified in the course syllabus. Instructors are required to record attendance for grading and counseling purposes, and the frequency with which you consult the course Blackboard website and post your work is automatically monitored by the BlackBoard system.



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Instructors have the right to weigh attendance and class participation in determining grades, and your participation in weekly discussions of the course material constitutes a maximum of 140 possible points towards your final grade, as explained above under “Grading.” It is each student's responsibility to ascertain the effect attendance (i.e. regular on-time posting of the course assignments) and participation in the weekly discussions may have on the final grade in a course. For further details about these matters, see: <https://lehman-undergraduate.catalog.cuny.edu/appendix/attendance-and-absences>

ACCOMMODATING DISABILITIES

Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may require any special considerations should register with the Office of Student Disability Services in order to submit official paperwork to instructor. For more information, please contact the Office of Student Disability Services, Shuster Hall, Room 238, 718-960-8441. For detailed information on services and resources visit: <https://www.lehman.edu/student-disability-services/>, or email: disability.services@lehman.cuny.edu.

TUTORING SERVICES/ INSTRUCTIONAL SUPPORT SERVICES (ISSP)

Lehman College's Instructional Support Services Program (ISSP) is home of the Academic Center for Excellence (ACE) and Science Learning Center (SLC). Both offer students an array of activities and services designed to support classroom learning. Open to students at any level, there are individual, small group, and/or workshop sessions designed to improve “proficiency in writing, reading, research, and particular academic subject areas. Computer-assisted writing/language tutorial programs are also available,” as well as individual tutors, workshops and tutors.

To obtain more information about the ACE and the SLC, please visit the Lehman Tutoring Center at: <http://www.lehman.edu/academics/instructional-support-services/humanities-tutoring.php>, or call ACE at 718-960-8175, and SLC at 718-960-7707. Regular tutoring hours for fall & spring semesters are: M–T 10 a.m.-7 p.m., and Sat. 10 a.m.-2 p.m. Library Tutors are also available in the Library. These tutors offer help with Library resources and computers.

TECHNOLOGY AND BLACKBOARD INFORMATION

You are required to use **Blackboard** to access course materials. You are required to sign into your Lehman student **email** account for course messages—and check it! Blackboard will only allow me to send individual and mass messages to Lehman accounts. If there is an issue, this is the *only* account to which I can send and if I email the class something, the fact that you didn't know about an assignment or course change because you don't use your Lehman account will never be accepted for not knowing the information. Please see: <http://www.lehman.edu/itr/blackboard.php> For Information Technology: <http://www.lehman.edu/itr/>.

WRITING INTENSIVE COURSE REQUIREMENTS:

Lehman Students must complete four writing-intensive courses. In a WI Course, “students should be expected to write approximately 15–20 pages of proofread, typed work that is turned in to the instructor for grading.” WI courses focus on revision, short & long assignments, graded writing, etc., and each will have “a class-size limit of twenty-two. Under no circumstances will more than twenty-five students be admitted to any writing-intensive section.” For more information, see:

<http://www.lehman.edu/academics/general-education/writing-faqs.php>



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STUDENT HANDBOOK

Students are strongly encouraged to download and become familiar with the Student Handbook: <https://lehman.edu/office-campus-life/student-handbook.php>; for additional information about Lehman and campus services, see: <http://www.lehman.edu/campus-life/support-services.php>. Also, students should be aware of the many ways in which their experience at Lehman can be enriched through various “Experiential Learning” opportunities that the college has to offer: <http://www.lehman.edu/experiential-learning/>.

STUDENT CIVILITY AND CODE OF CONDUCT

Lehman College is committed to the highest standards of academic and ethical integrity. Acknowledging respect for self and others is the foundation of any civil society, but especially so in an scholarly setting. Civility in the classroom and respect for the opinions of others is imperative in any academic environment. It is likely that you may not always agree with everything discussed in the course of this semester, but courteous responses and civil expressions in everything you write, including email, is expected. No acts of harassment and/or discrimination based on matters of race, gender, sexual orientation, religion, and/or ability are acceptable. All students, faculty, and staff, have a right to expect a safe and respectful environment, one that honors civility in all exchanges, whether they be spoken or communicated in writing. Everyone is expected to communicate in a professional and courteous manner across all platforms (verbal, non-verbal, written or electronic). For the college’s official position on these and related matters, please see Lehman’s policies as stated by the Division of Student Affairs regarding “Community Standards”: <https://www.lehman.edu/student-affairs/community-standards.php>.



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Joseph W. Dauben

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SYLLABUS

Week of September

- 02: Week I: Introduction to “The Ascent of Man”
- 09: Week II: The Evolutionary Scheme of Things, from Prokaryotes to *Homo sapiens*
Film and discussion: “Lower than the Angels”
- 16: Week III: The Origins of Civilization: “*Homo faber*”
Film and discussion: “The Harvest of the Seasons”
- 23: Week IV: Technology and Ancient Civilizations
Film and discussion: “The Grain in the Stone”
- 30: Week V: The Architecture of Chemistry: Alchemy and the Elements
Film and Discussion: “The Hidden Structure” [First draft of first essay due October 6]

Week of October

- 07: Week VI: Magic Numbers, Eternal Circles, and Motion of the Heavens
Film and discussion: “The Music of the Spheres”
- 14: Week VII: Astronomy and the Telescope: Condemnation of Galileo
Film and discussion: “The Starry Messenger” [Revised essay on Galileo due October 20]
- 21: Week VIII: Newton and the Perfection of Universal Gravitation
Film and discussion: “The Majestic Clockwork”
- 28: Week IX: Science and the Industrial Revolution: Tinkerers or Thinkers?
Film and discussion: “The Drive for Power” [First draft of second essay due November 3]

Week of November

- 04: Week X: The Origins and Evolution of Life: Darwin and Evolution
Film and discussion: “The Ladder of Creation”
- 11: Week XI: Quantum Physics and the Atom: Deep Structure of Matter
Film and discussion: “World Within World” [Revised essay on Darwin due November 17]
- 18: Week XII: Science and Accountability: Building the Atomic Bomb
Film and discussion: “Knowledge or Certainty”
- 25: No assignments due; Thanksgiving break

Week of December

- 02: Week XIII: Watson, Crick and Franklin: DNA and Modern Biochemistry
Film and discussion: “Generation upon Generation” [First draft of final essay due December 1]
- 09: Week XIV: Science and Civilization: Shaping the Modern World
Film and discussion: “The Long Childhood”
- 16: Last week of the Fall Semester; No weekly assignments due [Revised essay on Watson, Crick, and the Double Helix due December 15]



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Joseph W. Dauben
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BOOKS REQUIRED FOR THE COURSE

Bronowski, Jacob (1974). *The Ascent of Man*. New York, NY: Little Brown & Co.: BBC Books, 2013.
ISBN-10: 1849901155; ISBN-10: 0316109304; 13: 978-0316109307
List Price: \$24.95; Kindle \$10.99; Used (Amazon) \$5.58

Internet Archive: https://archive.org/details/ascentofman0000bron_y1z2

Galilei, Galileo (1957). *Discoveries and Opinions of Galileo*. S. Drake (Ed.). New York, NY: Anchor.
ISBN-13: 978-0385092395; ISBN-10: 0385092393
List Price: \$16.00; Used (Amazon): \$1.16

Internet Archive: <https://archive.org/details/B-001-001-741>

Appleman, Philip (Ed.) (2000). *Darwin* (Norton Critical Edition). New York, NY: W.W. Norton & Company, 3rd edition.

ISBN-13: 978-0393958492; ISBN-10: 0393958493

List price: \$27.00; Amazon \$22.89; Used (Amazon): \$1.35

Be sure to get the 3rd edition of the Norton Critical Edition of the Darwin book; earlier editions do not include the readings necessary for the essay assignment on Darwin.

Open Library: <https://openlibrary.org/books/OL22001931M/Darwin#editions-list>

Watson, James (1980). *The Double Helix*. (Norton Critical Edition). G. Stent (Ed.). New York, NY: W.W. Norton & Company. ISBN-13: 978-0393950755 ISBN-10: 0393950751

List price: \$34.40; Amazon: \$24.78; Used (Amazon): \$8.21

Be sure to get the Norton Critical Edition of this book, edited by Gunther Stent. Other versions of The Double Helix are available from other publishers, but they do not include the material required for this course.

The Ascent of Man is widely available in branch libraries of the New York Public Library, and in most campus libraries throughout the City University of New York. It is also available in used copies from Amazon.com (<http://www.amazon.com>), or from Abe Books (<http://www.abebooks.com>), often for as little as \$1.99 (plus shipping). Copies of the weekly television programs, as originally aired on BBC-TV, are available on CDs for viewing in the Lehman College Fine Arts Library on the second floor of the Lief Library. They may also be seen on YouTube.

Please note that for the purposes of this course, the Norton Critical Editions of *Darwin* and James Watson's *The Double Helix* are the editions required to properly complete the writing assignments related to each. Of the Norton Critical Edition of *Darwin*, be sure to get the third edition.



The Ascent of Man

An Introduction to the History of Science

DEPARTMENT OF HISTORY
HERBERT H. LEHMAN COLLEGE, CUNY
FALL SEMESTER, 2024

HIS 239–A01: THE ASCENT OF MAN AN INTRODUCTION TO THE HISTORY OF SCIENCE

Joseph W. Dauben
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DATES BY WHEN WEEKLY DESCRIPTIVE (DWA) AND ANALYTICAL (AWA) WRITING ASSIGNMENTS ARE DUE:

Week of September

- 02: Week I: Introduction to “The Ascent of Man”
DWA due Tuesday, September 3 (Self-Introduction)
AWA due Thursday, September 5
- 9: Week II: The Evolutionary Scheme of Things, from Prokaryotes to *Homo sapiens*
DWA due Monday, September 9; AWA due Thursday, September 12
- 16: Week III: The Origins of Civilization: “*Homo faber*”
DWA due Monday, September 16; AWA due Thursday, September 19
- 23: Week IV: Technology and Ancient Civilizations
DWA due Monday, September 23; AWA due Thursday, September 26
- 30: Week V: The Architecture of Chemistry: Alchemy and the Elements
DWA due Monday, September 30; AWA due Thursday, October 3

Week of October

- 7: Week VI: Magic Numbers, Eternal Circles, and Motion of the Heavens
DWA due Monday, October 7; AWA due Thursday, October 10
- 14: Week VII: Astronomy and the Telescope: Condemnation of Galileo
DWA due Tuesday, October 15; AWA due Thursday, October 17
- 21: Week VIII: Newton and the Perfection of Universal Gravitation
DWA due Monday, October 21; AWA due Thursday, October 24
- 28: Week IX: Science and the Industrial Revolution: Tinkerers or Thinkers?
DWA due Monday, October 28; AWA due Thursday, October 31

Week of November

- 4: Week X: The Origins and Evolution of Life: Darwin and Evolution
DWA due Monday, November 4; AWA due Thursday, November 7
- 11: Week XI: Quantum Physics and the Atom: Deep Structure of Matter
DWA due Monday, November 11; AWA due Thursday, November 14
- 18: Week XII: Science and Accountability: Building the Atomic Bomb
DWA due Monday, November 18; AWA due Thursday, November 21
- 25: November 25-December 1: Thanksgiving Break, no assignments due

Week of December

- 2: Week XIII: Watson, Crick and Franklin: DNA and Modern Biochemistry
DWA due Monday, December 2; AWA due Thursday, December 5
- 9: Week XIV: Science and Civilization: Shaping the Modern World
DWA due Monday, December 9; AWA due Thursday, December 12
- 16: Week XV: Last Week of the Fall Semester: No weekly assignments due



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Week of September 2:

Week I: Reading Assignment

Familiarize yourself with the book by Jacob Bronowski, *The Ascent of Man*. Read the Table of Contents, and pay particular attention to the Chapter titles and illustrations as you page through the book, scanning the pages and reading whatever parts interest you in particular. Look for places where Bronowski talks about himself, explaining his own particular interests in the subjects he is discussing. Once you have finished looking through the entire book, you should have a good overall idea of what the course will cover.

Week I: Descriptive Writing Assignment (10 points) (Due no later than midnight, Tuesday, September 3)

Write a brief self-introduction about yourself to help everyone in the course get to know you and your interests, especially as they relate to this course. Please include information about what you are studying, your major and/or minor if you have decided these, and anything about your academic or extra-curricular activities that will help everyone to know you better. Once you have posted your self-introduction on the course's "Discussion Board" in the folder for the "Week I: Descriptive Writing Assignment," read the self-introductions others taking *The Ascent of Man* this semester have posted.

Also, please be sure to post your Plagiarism Form in the folder provided on the course Discussion Board following the "Open Forum" folder at the top of the Discussion Board no later than September 3. An additional 10 points will be added to your cumulative grade for doing so. No points will be posted for any student until they have posted the Plagiarism Form.

Week I: Analytical Writing Assignment (20 points) (Due no later than midnight, Thursday, September 5)

Why do you think Bronowski entitled his book *The Ascent of Man*? What does Bronowski tell you about himself in the book that helps to explain his background and interests? Be sure to give chapter and page references for the examples you give, in square brackets, e.g. [Bronowski, Chapter 1: 30]. Why does Bronowski think that the history of science and technology is so important for understanding the development of Western civilization?

Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before posting it on the Blackboard "Discussion Board" in the folder for the "Week I: Analytical Writing Assignment."

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. Discussion of this week's topic ends on September 8; discussion of next week's topics begins on September 9.



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Week of September 9:

Week II: Reading Assignment

Read Chapter One of *The Ascent of Man* this week, “Lower than the Angels,” and watch the first program in the BBC television series. Also read the first section in Stillman Drake’s edition of *Discoveries and Opinions of Galileo* devoted to the *Sidereus Nuncius*, including Drake’s introduction to this early work by Galileo.

Examine the actual first edition of the [Sidereus Nuncius](#). You can also download a pdf copy of this book from [<http://digital.libraries.ou.edu/histsci/books/1466.pdf>]. As you look through the original version of the *Sidereus Nuncius*, note the title page and illustrations in particular.

Additional useful information about the *Sidereus Nuncius* may be found on the webpage supported by the Department of History and Philosophy of Science at Cambridge University: [The Starry Messenger](#). Other useful websites for information about Galileo may be found at [The Galileo Project](#) at Rice University, and among the resources made available at the [Museo Galileo](#) in Florence, Italy (available in both English and Italian versions).

This would also be a good time to read the first essay assignment (first draft not due until October 6), to familiarize yourself with questions to keep in mind as you are working on the weekly analytical writing assignments. The weekly assignments are intended to help you in organizing the topics you should address in your first essay for the course, the general subject of which is Galileo.

Week II: Descriptive Writing Assignment (10 points)

(Due no later than midnight, Monday, September 9)

Why do you think Bronowski entitled his first program in the *Ascent of Man* “Lower than the Angels”? What do you think he meant by this? And why start this episode with grunion on a beach in Southern California? What do grunion have to do with the *Ascent of Man*? In drawing your first writing assignment to a conclusion, what did you find most interesting or unusual in this first episode of the *Ascent of Man*? Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before posting it on the Blackboard “Discussion Board” in the folder for the “Week II Descriptive Writing Assignment.”

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week’s topic ends on September 15; discussion of next week’s topics begins on September 16.

Week II: Analytical Writing Assignment (20 points)

(Due no later than midnight, Thursday, September 12)

Read Galileo’s *Sidereus Nuncius* and Drake’s introduction to this early work in *Discoveries and Opinions of Galileo*. What are the major discoveries Galileo made with his telescope that he describes in this work? Why was he surprised to see mountains on the Moon? What were the “Medician” stars, and what was especially important about Galileo’s observations of Jupiter? What conclusions did Galileo draw from what he saw with his telescope that began the revolution in astronomy that would eventually lead to his condemnation by the Catholic Church in 1633? Why did Galileo call this early work *Sidereus Nuncius*, and do you think this was an appropriate title? Don’t forget to consult and refer in your essay to the first edition of the *Sidereus Nuncius*, available on-line: [<http://digital.libraries.ou.edu/histsci/books/1466.pdf>].



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Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before posting it on the Blackboard “Discussion Board” in the folder for the “Week II Analytical Writing Assignment.”

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. Discussion of this week’s topic ends on September 15; discussion of next week’s topics begins on September 16.

Week of September 16:

Week III: Reading Assignment

Read Chapter 2 of *The Ascent of Man* this week, “Harvest of the Seasons,” and watch the second program in the BBC television series. Videotaped copies are on reserve in the library. Also read the second section in Stillman Drake’s edition of *Discoveries and Opinions of Galileo* devoted to the *Letters on Sunspots*, as well as Drake’s introduction to this chapter.

Week III: Descriptive Writing Assignment (10 points)

(Due no later than midnight, Monday, September 16)

This week’s focus of Bronowski’s *The Ascent of Man* is the agricultural revolution considered in “The Harvest of the Seasons.” Describe briefly the major features of what happened to agriculture as a result of its “domestication,” and the evidence pinpointing when and where this first occurred. What effect did this have upon the “Ascent of Man”? How did it affect the organization of society, the first steps towards social stratification, and the emergence of professions? Above all, what more was required than the two genetic “accidents” Bronowski describes to make the agricultural revolution a reality? Consider, in particular, the social dimensions of this revolution, and how agriculture required fundamental changes in the nature and organization of human society. In particular:

(1) Bronowski asserts that “The largest step in the ascent of man is the change from nomad to village agriculture?” (p. 64) and also that “The domestication of animals that came with agriculture gave new vigour to nomad economies” (p. 86). Are these two assertions contradictory? If not, how can they be reconciled?

(2) Bronowski, on p. 74, says that the people of the Americas, unlike the people of the Middle East, “failed” to domesticate draft animals. Can you think of an explanation for that failure? Hint: See Jared Diamond, “Why Did Human History Unfold Differently On Different Continents For The Last 13,000 Years?” at <http://www.edge.org/conversation/why-did-human-history-unfold-differently-on-different-continents-for-the-last-13000-years>.

(3) Bronowski doesn’t seem to think very highly of Genghis Khan’s role in the “Ascent of Man.” Is there anything positive that could be said about it? [Hint: Search the web for reviews of Jack Weatherford’s *Genghis Kahn and the Making of the Modern World*.]

Finally, why do you think agriculture began when it did rather than much earlier? Did this great innovation in human lifestyle spread throughout the world from a single point of common origin? Does Bronowski believe it was “accidental” (i.e., it just happened), or was it an “invention” (i.e., it was intentionally created by human beings)?



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After you have posted your reply to this assignment, read the work posted by your fellow students, and respond with questions or comments based upon your reading and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week's topic ends on September 22; discussion of next week's topics begins on September 23.

Week III: Analytical Writing Assignment (20 points)

(Due no later than midnight, Thursday, September 19).

In the Fall of 1610 Galileo made a systematic series of observations of the phases of Venus. Describe briefly what he saw, and how his observations helped to confirm the Copernican heliocentric theory of the solar system. How did his observations clearly refute the Ptolemaic theory? How would you compare his discoveries of sunspots and the phases of Venus with the observations he had made earlier and published in the *Siderius Nuncius*? Why do you think he did not report the phases of Venus in "The Starry Messenger," but did mention this in the "Letters on Sunspots"?

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of the "Letters on Sunspots" and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week's topic ends on September 22; discussion of next week's topics begins on September 23.

Week of September 23:

Week IV: Reading Assignment

For this week, read Chapter 3 in *The Ascent of Man*, "The Grain in the Stone," and watch the third program in the BBC television series. Videotaped copies are on reserve in the library. Read as well Galileo's "Letter to the Grand Duchess Christina" in Stillman Drake's edition of *Discoveries and Opinions of Galileo*.

NOTE: Bronowski's comments on the *quipus* are somewhat dated. Although this is not required reading, if you would like to read about more recent research on the subject, try one of these links:

"String, and Knot, Theory of Inca Writing": <http://www.ee.ryerson.ca/~elf/abacus/inca-khipu.html> or
"Untangling the Mystery of the Inca": <http://www.wired.com/wired/archive/15.01/khipu.html>

Week IV: Descriptive Writing Assignment (10 points)

(Due to be posted no later than midnight, Monday, September 23)

This week Bronowski is interested in architecture, and some of the great inventions like the arch that made the construction of Roman aqueducts and medieval cathedrals possible. What is it about the arch that made such new and remarkable structures possible? Describe the buildings of the Greeks and Incas, and how they were limited compared with what the Romans and later civilizations were able to construct thanks to the arch. Why does Bronowski entitle this episode "The Grain in the Stone"? What do you think he means by this, and what does it have to do with architecture?



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Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before positing it on the Blackboard "Discussion Board" in the folder for the "Week IV: Descriptive Writing Assignment."

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, Drake, Galileo, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week's topic ends on September 29; discussion of next week's topics begins on September 30.

Week IV: Analytical Writing Assignment (20 points)

(Due to be posted no later than midnight, Thursday, September 26)

Galileo wrote a letter to the Grand Duchess Christina (who was she?) to answer a question she had raised about whether or not the Copernican theory that the earth moved was in conflict with religion, and especially the Bible. After you have read Galileo's "Letter to the Grand Duchess Christina" in Stillman Drake's edition of *Discoveries and Opinions of Galileo*, describe briefly the main points of the letter, why Galileo wrote it, and how he reconciles the apparent conflict between science and religion. What are his most convincing arguments, do you think, for saying that science and religion should not be regarded as antagonistic? What role does mathematics play in Galileo's argument? And how does he answer those who were concerned that a stationary Sun and a moving Earth were in conflict with the Bible, and with the story in Joshua (Book X: 12–14) where Joshua commands the Sun to stop in the heavens over Gibeon in the battle with the Amorites in order to lengthen the day? What does Galileo say is wrong with this argument? And why is this important to the point Galileo wishes to make about the Scriptures? In a final paragraph, summarize your evaluation of the "Letter" and whether you think it was an effective defense of Galileo's ideas or not.

NOTE: The text of Galileo's "Letter to the Grand Duchess Christina," translated into English, is also available on the following website: <http://www.fordham.edu/halsall/mod/galileo-tuscany.html>

Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before positing it on the Blackboard "Discussion Board" in the folder for the "Week IV: Descriptive Writing Assignment."

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, Drake, Galileo, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week's topic ends on September 29; discussion of next week's topics begins on September 30.



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Week of September 30:

Week V: Reading Assignment

For this week, read Chapter 4 in *The Ascent of Man*, “The Hidden Structure,” and watch the fourth program in the BBC television series. Videotaped copies are on reserve in the library. Read as well Galileo’s *The Assayer* in Stillman Drake’s edition of *Discoveries and Opinions of Galileo*, including Drake’s introduction to this section of the book. See also the description of this work to be found on the website of the History of Science Department at the University of Oklahoma, paying particular attention to the illustrations of [The Assayer](#).

Week V: Descriptive Writing Assignment (10 points)

(Due to be posted no later than midnight, Monday, September 30)

This week Bronowski is interested in the invisible structure of matter, and he notes that fire was a major factor in unlocking the secrets of chemical structure in particular. An important (but wrong) early theory about what fire was involved the theory of “phlogiston.” In addition to what Bronowski says about this, read the article by Jim Loy on “Phlogiston Theory” on the course Blackboard website under “Course Documents.” There are also many websites that will give you more information about “phlogiston,” among them, see this article by Professor Leslie Woodcock at the University of Manchester, UK: [“Phlogiston Theory and Chemical Revolutions,”](#) and another, more academic discussion by Professor Hasok Chang of Cambridge University: [“The Hidden History of Phlogiston.”](#) Consult these, and any other sites you like, and then answer the following questions:

What was phlogiston?

What is the best evidence against it?

What did it take to refute the phlogiston theory?

Why was Lavoisier successful in doing so?

Why do you think this theory, which proved to be entirely wrong, was so popular and followed by many of the greatest scientists, including Joseph Priestley?

If you use other websites, be sure to include a reference so others in the class can visit them as well.

Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before posting it on the Blackboard “Discussion Board” in the folder for the “Week V: Descriptive Writing Assignment.”

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, Drake, Galileo, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week’s topic ends on October 6; discussion of next week’s topics begins on October 7.

Week V: Analytical Writing Assignment (20 points)

(Due to be posted no later than midnight, Thursday, October 3)

Describe in an opening paragraph why Galileo wrote “The Assayer” and what it is about. Be sure to explain why Galileo chose this title, and what he meant to convey by doing so. In a second paragraph, explain what Galileo means when he says, “nature takes no delight in poetry.” Why is science NOT like poetry? What IS



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science like, according to Galileo? Finally, link the above two paragraphs to one concluding paragraph about the importance of mathematics to Galileo for his understanding of science and of nature. He speaks at one point of language--not the language of poets, but the language of mathematics. How do you think this relates to his other works in Discoveries and Opinions of Galileo, and in particular, his attempts to defend himself from his critics? Do you think Galileo was able to do so effectively in "The Assayer"?

Please write two or three paragraphs, or approximately one page (250 words). Proofread your assignment for correct spelling, grammar, punctuation, etc., before positing it on the Blackboard "Discussion Board" in the folder for the "Week V: Analytical Writing Assignment."

After you have posted your reply to this assignment, read the work posted by your fellow classmates, and respond with questions or comments based upon your reading of Bronowski, Drake, Galileo, and any other relevant information at your disposal. Up to ten points are awarded each week for substantive questions or comments that advance discussion of this assignment in a meaningful way. In the course of the semester, this could mean an additional 140 points towards your final grade. Discussion of this week's topic ends on October 6; discussion of next week's topics begins on October 7.



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DEPARTMENT OF HISTORY
HERBERT H. LEHMAN COLLEGE
FALL SEMESTER, 2024

HIS 239–A01: THE ASCENT OF MAN
AN INTRODUCTION TO THE HISTORY OF SCIENCE

Joseph W. Dauben

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First Essay Assignment

First Drafts due no later than Sunday, October 6 (50 points)
Final Revised Essay due no later than Sunday, October 20 (100 points)

GALILEO AND THE SCIENTIFIC REVOLUTION

Readings:

Bronowski, Jacob (1974). *The Starry Messenger*. In *The Ascent of Man*. New York, NY: Little Brown & Co., Chapter 6.

Galilei, Galileo (1957). *The Starry Messenger* (1610), *Letters on Sunspots* (1613), *Letter to the Grand Duchess Christina* (1615), and *The Assayer* (1623). In S. Drake (Ed.). *Discovery and Opinions of Galileo*. New York, NY: Anchor. Read the introductions by Stillman Drake to each of Galileo's works, and cite at least one passage from each of Galileo's four works in the course of your essay.

Questions to answer in writing your essay:

What are the most convincing observations Galileo reports in *The Starry Messenger* that support the Copernican theory that the Earth moves around the Sun? What did Galileo's later discoveries of the phases of Venus and sunspots contribute to discussions of the Copernican theory?

A major component of Galileo's new contributions to science in the 17th century was his appreciation that mathematics was the key to understanding Nature. Why was this view "revolutionary" in Galileo's day, and what evidence did he have to support the idea that mathematics is the "language" of Nature?

What does Galileo say in his *Letter to the Grand Duchess Christina* and *The Assayer* about the relationship between science and religion? Galileo's critics argued that the Copernican theory contradicted the Bible and should therefore be rejected. Why did Galileo believe that science was not in conflict with religion, and indeed, could be taken as a positive rather than a negative factor in theology?

Finally, assume the role of one of Galileo's Aristotelian opponents (not one of his theological critics). Put your arguments against Galileo in your own letter addressed to the Grand Duchess Christina. What objections could you have made at the time to his assertion that the Earth moved, and that the cosmos was heliocentric rather than geocentric? What philosophical or metaphysical arguments might you use as part of the Scholastic opposition to the heliocentric theory? You should indent and single-space this part of your essay, provide a transitional sentence to this paragraph, and begin with a salutation: "Dear Grand Duchess Christina." Be sure to write as if you were one of Galileo's academic (and not one of his religious) critics.

Complete your paper with a final paragraph, reflecting upon your "letter" and why it was that, nevertheless, Galileo and the Copernicans eventually prevailed during the Scientific Revolution. Be sure to cite at least one passage from each of Galileo's four works in the course of your essay.

NOTE: You should post the first draft of this essay assignment by October 6 (50 points). The final, revised version of your essay should be posted by midnight, October 20 (100 points). Please write no more than 5 pages, double-spaced typing, or no more than the equivalent of about 1200 words. Provide as many examples to illustrate your conclusions as you think relevant from your readings. Be sure to proofread your paper for readable style, proper spelling, grammar, punctuation, etc. Follow the formatting guidelines carefully and post your essay as an MS-Word .doc or .docx file (*not* as a .pdf file).



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NOTES ON STYLE AND FORMAT

Give your essay a title, and under the title (centered), skip a space and then center your name on the next line, with your e-mail address on the next, at the top of the first page:

Title of Your Essay Here

Your name

Your e-mail address

At the top of each subsequent page, left-justify a header with the following information, including page numbers in the upper right-hand corner:

Your name here: Magnus, Albertus

Page ##

Title of your essay here: *Galileo and the Scientific Revolution*

Date: October 6, 2024 (i.e. your date of submission)

Please type or word-process your essay leaving 1" top and bottom margins, and both left and right margins of 1". Be sure to double-space the body of your essay. Submit your essay as an attachment, using Microsoft Word, either .doc or .docx.

The following cover some basic points which you should keep in mind as you prepare the final version of your essay. In general, your essay should follow the *University of Chicago Manual of Style* in all matters of format and punctuation. You can find an on-line version of the Chicago manual at: <http://www.chicagomanualofstyle.org/home.html>. A "Quick Guide" for ready reference is also available here: http://www.chicagomanualofstyle.org/tools_citationguide.html.

Before submitting either the draft or final revised version of your essay, be sure to check for proper spelling, grammar, readable English prose, etc. Among the most common matters to which you should pay particular attention, are the following:

Accents: Check carefully, especially in translations, for correct accents on all foreign words, which should be *italicized* unless they are proper names.

Antecedents: If you refer to something like "this example...", be sure "this" has a correct antecedent, i.e. there must be a reference to an example of some sort in the preceding line or lines. He/she/it/they also require identifiable antecedents in the preceding sentence.

Colloquial expressions: Remember that you are writing an academic paper, one that should reflect a serious level of scholarship and your best writing. Do not use colloquial expressions such as "an awful lot," "figure out," etc. Avoid abbreviations like "math" for "mathematics"; use "examinations" instead of "exams" or "television" instead of "TV"; do not use contractions, but write "is not" instead of "isn't," etc.

Notes. Please use in-text notes to cite assigned readings, making clear the author and title of the work you are citing, along with a page reference, i.e. [Galileo, *Sidereus Nuncius* 1610, quoted from Drake 1957: 35]; please be sure to include page numbers for printed material. Then be sure to provide a full citation to all material you cite in your bibliography at the end of your essay.

Paragraph indentation: Indent each paragraph by 1/2", consistently, throughout your entire essay.

Punctuation: Quotations should be punctuated either as follows: "...last word." or "...last word," [Bronowski 1974: 55–56]. If you are citing multiple pages, use an en-dash to separate page numbers (and years): 1610–1632 (not 1610-1632).

Use a hanging indent for your bibliography of works cited at the end of your essay. If you don't know what this is, google "hanging indent." Likewise, if you don't know the difference between an en-dash (–), an em-dash (—), and a hyphen (-), or when to use one rather than another, google these as well.

Titles: Be sure to italicize the titles of all book and journals you cite; use "quotation marks" for the titles of articles in journals, material you cite from websites, etc. When citing a website, be sure to give the URL information, and the date you accessed the material, e.g.

Albert van Helden, "The Telescope," *The Galileo Project* (1995): <http://galileo.rice.edu/sci/instruments/telescope.html> (accessed 5/12/2017).

Final proofreading. Be sure to proofread your essay for correct punctuation, spelling and grammar *before* you submit it. Please remember that your ideas, no matter how good they are, will suffer if they are not presented clearly and coherently. Avoid overly complex writing in favor of short, descriptive, clear and accurate sentences. Do not use vague generalities when concrete, specific examples will help to support your arguments much more effectively.



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An Introduction to the History of Science

DEPARTMENT OF HISTORY
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FALL SEMESTER, 2024

HIS 239 A01: THE ASCENT OF MAN
AN INTRODUCTION TO THE HISTORY OF SCIENCE

Joseph W. Dauben

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Second Essay Assignment

First Draft due November 3 (50 points)

Final Revised Essay due November 17 (150 points)

DARWIN AND SOCIAL DARWINISM

Readings:

Bronowski, Jacob (1974). *The Ladder of Creation*. In *The Ascent of Man*. New York, NY: Little Brown & Co., Chapter 9.

Darwin, Charles (2000). *A Darwin Reader* (Norton Critical Edition). P. Appleman (Ed.). New York, NY: W.W. Norton & Company, 3rd edition. Read in particular:

Darwin. An Historical Sketch of the Progress of Opinion on the *Origin of Species*, previous to the Publication of This Work, pp. 87–94; Gavin de Beer. Biology Before the Beagle, pp. 33–39; Hull, Sedgwick, Owen, and Jenkin, pp. 257–275; Hooker, Huxley and Lyell, pp. 276–287; Carnegie and Kropotkin, pp. 396–403.

And in the section on Creationism, read:

ICR: Tenets of Creationism, Henry M. Morris, and Thomas J. Wheeler, pp. 555–568.

Eugenie C. Scott, 534–541; Richard Dawkins, Phillip E. Johnson, Eugenie C. Scott,

Michael Behe, Robert Dorit, and Michael Ruse, pp. 577–612.

Scientists' Opposition to Creationism, pp. 613–623.

Questions to answer in writing your essay:

Darwin's was by no means the first evolutionary theory of the 19th century. Compare the ideas of Lamarck with those of Darwin and discuss the points on which they differ most significantly. How was Darwin's voyage on the Beagle instrumental in producing the fundamental ideas of his new theory? What observations did Darwin make (or fail to make at the time) which proved to be most suggestive in countering Lamarck's theory and supporting Darwin's? What role did Albert Russel Wallace play in the debates over evolution? How would you compare and contrast Darwin and Wallace—how were they most similar, and how most different? Why is Darwin most often credited for the theory of evolution, and Wallace largely forgotten?

Apart from biology, what role did other sciences (like mathematics, geology, physics, etc.) play in Darwin's formulation or defense of his evolutionary theory? Be sure to consider the confrontation between Catastrophists and Uniformitarians, and above all, Lyell's *Principles of Geology*. What were the major difficulties Darwin faced in defending this theory? Consider in particular Lord Kelvin's determination of the age of the Earth, and problems that were later solved by means of genetic explanations.

In closing, what do you make of the debate over Creationism? Describe briefly the views of Henry M. Morris, Phillip E. Johnson, and Michael Behe. Who are they and what scientific credentials, if any, do they have? What has been the general response of the scientific community to their views? What does Dawkins mean by—and have against—what he calls the “argument from personal incredulity”? What are the main arguments Ruse offers in answer to Creationists? Finally, in your closing paragraph, how would you summarize the revolutionary character of Darwin's *The Origin of Species*? Be sure to quote from at least *four* different authors from the above assigned readings in the course of your essay.

NOTE: You should post the first draft of the second essay assignment by November 3 (50 points). The final, revised version of the second essay must be posted by November 17 (150 points). In writing your essay, you should rely above all on primary sources. Please write no more than 5-6 pages, double-spaced typing, or no more than the equivalent of about 1200 words. Be sure to give proper citations and a bibliography of all works cited. Provide as many examples to illustrate your conclusions as you think relevant from your readings. Be sure to proofread your paper for readable style, proper spelling, grammar, punctuation, etc. Please save and post your essays as MS-Word .doc or .docx file (not as a .pdf file). Please pay careful attention to the proper formatting of your revised essay, following the instructions provided on the following page of “Notes on Style and Format.” Be sure that your running header contains your name, a brief title of your paper, and the date justified with the left margin, and the page number at the top of the page justified with the right margin.



The Ascent of Man

An Introduction to the History of Science

NOTES ON STYLE AND FORMAT

Give your essay a title, and under the title (centered), skip a space and then center your name on the next line, with your e-mail address on the next, at the top of the first page:

Title of Your Essay Here

Your name

Your e-mail address

At the top of each subsequent page, left-justify a header with the following information, including page numbers in the upper right-hand corner:

Your name here: Magnus, Albertus

Page #

Title of your essay here: *Darwin and the Darwinian Revolution*

Date: November 3, 2024 (date of submission of your essay)

Please type or word-process your essay leaving 1" top and bottom margins, and both left and right margins of 1". Be sure to double-space the body of your essay. Submit your essay as an attachment, using Microsoft Word, either .doc or .docx.

The following cover some basic points which you should keep in mind as you prepare the final version of your essay. In general, your essay should follow the *University of Chicago Manual of Style* in all matters of format and punctuation. You can find an on-line version of the Chicago manual at: <http://www.chicagomanualofstyle.org/home.html>. A "Quick Guide" for ready reference is also available here: http://www.chicagomanualofstyle.org/tools_citationguide.html.

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Antecedents: If you refer to something like "this example...", be sure "this" has a correct antecedent, i.e. there must be a reference to an example of some sort in the preceding line or lines. He/she/it/they also require identifiable antecedents in the preceding sentence.

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Notes. Please use in-text notes to cite assigned readings, making clear the author and title of the work you are citing, along with a page reference, i.e. [Galileo, *Sidereus Nuncius* 1610, quoted from Drake 1957: 35]; please be sure to include page numbers for printed material. Then be sure to provide a full citation to all material you cite in your bibliography at the end of your essay.

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Albert van Helden, "The Telescope," The Galileo Project (1995): <http://galileo.rice.edu/sci/instruments/telescope.html> (accessed 5/12/2017).

Final proofreading. Be sure to proofread your essay for correct punctuation, spelling and grammar *before* you submit it. Please remember that your ideas, no matter how good they are, will suffer if they are not presented clearly and coherently. Avoid overly complex writing in favor of short, descriptive, clear and accurate sentences. Do not use vague generalities when concrete, specific examples will help to support your arguments much more effectively.



The Ascent of Man

An Introduction to the History of Science

DEPARTMENT OF HISTORY
HERBERT H. LEHMAN COLLEGE
FALL SEMESTER, 2024

HIS 239–A01: THE ASCENT OF MAN
AN INTRODUCTION TO THE HISTORY OF SCIENCE

Joseph W. Dauben
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Third Essay Assignment

First Draft due December 1 (50 points)/ Final Revised Essay due December 15 (200 points)

WATSON, CRICK AND THE STRUCTURE OF DNA: DISCOVERY OF THE DOUBLE-HELIX

Readings:

- Bronowski, Jacob (1974). Chapter 12: *Generation upon Generation*. In *The Ascent of Man*. New York, NY: Little Brown & Co.
- Watson, J.D. (1980). *The Double Helix* (Norton Critical Edition). G. Stent (Ed.). NY: New York, W.W. Norton & Company, 3rd edition. Read in particular:
- Crick, F. The Double Helix: A Personal View, pp. 137–145;
- Klug, A. Rosalind Franklin and the Discovery of the Structure of DNA, pp. 153–158.
- Read as well the reviews of *The Double Helix* when it appeared, all reprinted in the Norton Critical Edition, pp. 175–234.

Questions to answer in writing your essay:

In *The Double Helix* James Watson recounts the process by which he and Francis Crick came to discover the double helical structure of DNA. Apart from the purely scientific, theoretical aspects of their work, what institutional, political, financial, personal, and other interests were at work? Here you should consider in particular financial matters, including Watson's fellowships, especially the problems he had with his Fellowship Board in Washington, D.C. You should also consider political problems (Pauling), additional personal interactions (Peter Pauling, tennis, hiking, pub crawling), and any other influences you think were at work that help to delineate the dynamics of creative work in science that are influential but not directly related to the data, experiments, and logic of scientific discovery itself. What does Crick have to say about their working relationship, Watson's personality, and in particular what he believed were the major elements contributing to their success? See also what F.X.S. had to say about this in (Watson/Stent 1980, pp. 177–185).

What role did Rosalind Franklin play? What personal and professional (or unprofessional) elements become particularly important in accounting for the way her work was used by Watson and Crick? Does she deserve more credit than Watson gives her for the crystallographic data she amassed? What roles do secrecy and competition play in the overall development of a scientific theory? Are these essential, or should ways be found to ensure open exchange of information in a uniform way?

What do you make of the criticisms that have been offered in response to Watson's book? Which of the reviews do you find the most convincing, and why? With which ones do you disagree most? Can you draw any conclusions about how science ought to be organized to reach, most effectively, its experimental and theoretical goals? What features are most important in stimulating scientific creativity and originality? Is Watson's account typical, in your opinion, of scientific discovery in general, or is it the egocentric viewpoint of an eccentric sensationalist? Be sure to quote from at least *four* different reviews in assessing Watson's account of the discovery of the double helix, and contrasting the major differences between those who reviewed his book when it was first published.

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Your name here: Magnus, Albertus

Page #

Title of your essay here: *Watson, Crick, and Their Discovery of the Double Helix*

Date: December 1, 2024 (date of submission of your essay)

Please type or word-process your essay leaving 1" top and bottom margins, and both left and right margins of 1". Be sure to double-space the body of your essay. Submit your essay as an attachment, using Microsoft Word, either .doc or .docx.

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