

STUDY MATERIALS: Galileo: Science and Religion

William Carroll, Ph.D., and Peter Hodgson, Ph.D.

Terms of Use. Catholic Thinkers media is copyrighted material. However, we have made it free with the expectation that it will be shared and used by many. If you share what you see here, please acknowledge your source, and send people our way to find more. You or your organization may not benefit financially from use of our media without written consent. Please [continue reading](#) for full terms of use, and contact us with questions or requests: info@catholicthinkers.org

Contents

[Review Questions by Lecture](#)

[Review Questions for the Final Examination](#)

[Galileo's Principal Writings](#)

[Bibliography](#)

Review Questions by Lecture

Lecture 1: The Legend of Galileo

What are the principal features of the legend of Galileo's encounter with the Inquisition?

Lecture 2: Galileo and the Renaissance

1. Describe the cosmologies of Aristotle and Ptolemy, and discuss their advantages and disadvantages.

2. Describe the way the ancient Greeks explained the motion of projectiles, and the improvements made by the medieval philosophers. What contribution did Galileo make towards a solution of this problem?

Lecture 3: Galileo the Physicist

1. What was Galileo's most important contribution to the development of science?

2. How did Galileo establish the connection between the distance a body falls and the time taken?

3. What was Galileo's contribution to hydrostatics?

Lecture 4: Galileo the Astronomer

1. What were Galileo's most important astronomical discoveries, and how did they affect the cosmology of Aristotle?
2. What are the main arguments for believing that the earth moves round the sun?
3. Was Galileo a Platonist or an Aristotelian?

Lecture 5: Galileo and the Inquisition I

What is Cardinal Bellarmino's argument that the claims for Copernican astronomy cannot simply be dismissed as being irrelevant to the Bible?

Lecture 6: Galileo and the Inquisition II

How does Galileo respond, in "The Letter to the Grand Duchess Christina," to the claim that Copernican astronomy challenges the truth of the Bible?

Lecture 7: Galileo and the Inquisition III

1. What role do the different senses of "hypothesis" play in the dispute between Galileo and the Inquisition?
2. Why is it important to distinguish between discipline and doctrine in examining the actions of the Inquisition with regard to Galileo?

Lecture 8: Galileo: Theologian

How does Professor Carroll's analysis of Galileo as biblical exegete challenge the long established view that Galileo anticipates the modern distinction between the Bible and science?

Review Questions for the Final Examination

William Carroll

1. How does the "legend" of Galileo's encounter with the Inquisition compare with the historical record described in the lectures for this course?

2. In what sense is Galileo a good Aristotelian and in what sense does he reject Aristotelian thought? between Galileo and the Inquisition?
3. How do the events of 1615 and 1616 constitute the crucial core of the "Galileo Affair"?
4. What were the decisions of the Inquisition and the Index of Forbidden Books in 1616?
5. Why is there such a concern among many of the interlocutors as to whether or not there is a demonstration for the motion of the Earth?
6. Examine the claim that Galileo's "Letter to the Grand Duchess Christian" is a charter document of the modern world.
7. Why did the authorities in Rome in 1632 and 1633 find that Galileo's Dialogue Concerning the Two Chief World System required a formal investigation by the Inquisition?

Peter Hodgson

1. What was the main source of Galileo's ideas on natural philosophy?
2. Why did Galileo believe that the earth goes round the sun, and how did he answer the arguments of the Aristotelians against this view?
3. Describe Galileo's work on sunspots, and show how he refuted alternative explanations.
4. Examine critically Galileo's explanation of comets.
5. Why did Galileo become involved in so many arguments with other scientists? Was he always fair to those who disagreed with him?
6. What was the role of thought experiments in Galileo's arguments?
7. Describe some of the scientific instruments that Galileo made, and their importance for his discoveries.
8. To what extent did Galileo show political skill in spreading his ideas?
9. Discuss Galileo's relations with Kepler and the extent to which he accepted his ideas.
10. Assess Galileo's contribution to the development of our ideas of motion.

Galileo's Principal Writings

Galileo was acutely conscious of the importance of speedy publication to claim priority for his discoveries. In order to ensure this without prematurely revealing what he had found he sometimes resorted to the device of publishing an anagram. Then, when he had established the new result without doubt, he could reveal the meaning of the anagram. He wrote many books describing his work, some in reply to attacks on his ideas, or wrote formal letters to persons of distinction with a view to eventual publication. Finally there are longer, carefully-considered treatises that deal with a much wider range of material. It may be useful to list his principal writings in order of publication, together with references to available translations.

1. *De Motu (On Motion)* 1592. Considers the application of Archimedes' principle to motion in a medium. Summarises Aristotle's ideas on motion, with some critical comments. Translated with introduction and notes by I.E. Drabkin in *Galileo Galilei on Motion and Mechanics*. University of Wisconsin Press, 1960.
2. *Le Meccaniche (On Mechanics)* 1600. Summary of the statics of simple machines. Translated with introduction and notes by Stillman Drake in *Galileo Galilei on Motion and Dynamics*. University of Wisconsin Press, 1960.
3. *Sidereus Nuncius (The Starry Messenger)* 1610. An account of his discovery of the satellites of Jupiter and other astronomical discoveries. Translated with introduction and notes by Stillman Drake in *Discoveries and Opinions of Galileo*. Doubleday, Anchor Books, 1957.
4. *Discorso . . . (Discourse on Bodies in Water)* 1612. Describes experiments on floating bodies, with additional remarks on natural philosophy.
5. *Letters on Sunspots*, 1612. Critique of the views of Christopher Scheiner and a dispute over priority. Partly translated by Stillman Drake (see item 3).
6. *Lettero alla Granduchessa di Toscana, Crestina di Lorena* 1615. Summary of his view on the relation of theology to science. Translated by Stillman Drake. (see item 3). Finocchiaro, 1989, p. 87.
7. *Discourse on the Tides*, 1616. Finocchiaro, 1989, p. 119.
8. *Il Saggiatore (The Assayer)* 1623. Discussion of the nature of comets, and a general defense of scientific investigation. Partly translated by Stillman Drake (see item 3).
9. *Dialogo . . . sopra i due Massimi Sistemi del Mondo, Tolemaico e Copernicano. (The Two Chief World Systems)* 1632. Full discussion of the arguments for and against the Copernican system. Abridged translation and guide, Finocchiaro, 1997.

10. *Discorsi a dimonstrazioni . . . (The Two New Sciences)* 1638. Comprehensive discussion of the properties of materials and of terrestrial motions.

11. *Dialogues concerning Two New Sciences*. By Galileo Galilei. Translated by Henry Crew and Alfonso de Savio. Northwestern University Press, 1968.

12. Many letters and other documents are published by Finocchiaro, 1989.

Bibliography

The most complete recent history of the encounter between Galileo and the Inquisition is the work of Fantoli. For a good account both of Galileo the scientist and his encounter with the Inquisition, see Sharratt.

Professor Albert Van Helden of Rice University has established a world-wide web site on Galileo: <http://galileo.rice.edu/>; students should examine its offerings. In addition, students should consult the web site of the Institute and Museum of the History of Science in Florence (now the Museo Galileo): <http://www.museogalileo.it/en>

From time to time throughout the lectures we will be using references from the works listed below.

Brief Essays

Blackwell, Richard J. "Galileo Galilei," in *The History of Science and Religion in the Western Tradition: An Encyclopedia*, edited by Gary B. Ferngren, pp. 85-89 (New York: Garland, 2000).

Fantoli, Annibale. "Galileo and the Church," in *Encyclopedia of the Scientific Revolution: From Copernicus to Newton*, edited by Wilbur Applebaum, pp. 252-255 (New York: Garland, 2000).

Settle, Thomas B. "Galilei, Galileo," in *Encyclopedia of the Scientific Revolution: From Copernicus to Newton*, edited by Wilbur Applebaum, pp. 245-252 (New York: Garland, 2000).

General Works

Blackwell, Richard J. *Galileo, Bellarmine, and the Bible*. University of Notre Dame Press, 1991.

Blackwell, Richard J. *Science, Religion, and Authority: Lessons from the Galileo Affair*. Marquette University Press, 1998.

Drake, Stillman (ed.) *Discoveries and Opinions of Galileo*. Garden City, New York: Doubleday, 1957.

Fantoli, Annibale. *Galileo: for Copernicanism and for the Church*. (translated by George Coyne), second edition. Vatican Observatory Publications, 1996.

Finocchiaro, Maurice A. (ed.) *The Galileo Affair: A Documentary History*. The University of California Press, 1989.

Langford, Jerome. *Galileo, Science, and the Church*. Ann Arbor: The University of Michigan Press, 1966

Sharratt, Michael. *Galileo: Decisive Innovator*. Oxford: Blackwell, 1994.

More Specialized Studies

Ariew, Roger. "Galileo's Lunar Observations in the Context of Medieval Lunar Theory," *Studies in the History and Philosophy of Science* 15, no. 3 (1984), pp. 212-227.

Brooke, John Hedley. *Science and Religion: Some Historical Perspectives*. Cambridge University Press, 1991.

Carroll, William E. "Galileo and the Interpretation of the Bible," *Science & Education* 8:2 (1999), pp. 151-187.

Feldhay, Rivka. *Galileo and the Church: Political Inquisition or Critical Dialogue?* Cambridge University Press, 1995.

Pederson, Olaf. *Galileo and the Council of Trent*. Vatican Observatory Publications, 1983. (Second edition, 1991)

Redondi, Pietro. *Galileo Heretic*. (trans. by R. Rosenthal). Princeton University Press, 1987 [*Galileo eretico*, Einaudi, 1983].

Van Helden, Albert (trans./ed.). *Sidereus Nuncius or The Sidereal Messenger*. Chicago: The University of Chicago Press, 1989.

Wallace, William A. *Galileo and His Sources*. Princeton University Press, 1984.