

# Outline on galileo galilei



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Thesis statement main argument The astronomer Galileo Galilei contributed to the field of astronomy majorly by observing the sky with a telescope he had built, observations which resulted in his discovery of many astronomical phenomena further proving that the Earth was not the center of the solar system.

Statement of purpose (scope of the essay): Following a brief biography of Galileo Galilei, this paper will determine the state of the scientific knowledge prior to Galileo's astronomical discoveries, explain what Galileo's contribution to astronomy was, and discuss how his findings subsequently changed humanity's conception of the universe.

Body

Topic sentence of paragraph 1: Besides being known as a very influential astronomer, Galileo Galilei was also known for being an Italian scientist and philosopher.

Birth date: February 15, 1564; Place of birth: Pisa, Italy. (" Galileo Biography," 2013)

Death date: January 8, 1642; Place of death: Arcetri, Italy. When he died, he was blind and very ill, and was under house arrest for heresy. (" Galileo Biography," 2013)

Galileo first started in a monastery school because he wanted to become a monk, but he eventually left the monastery and attended the University of Pisa to study medicine, like his father wished. However, he never completed

his medicine degree and instead found an interest in mathematics and philosophy. (Bellis, 2013; “ Galileo Galilei,” 2013)

Galileo taught for three years at the University of Pisa, but transferred to the University of Padua when his three-year contract at Pisa ended. (Bellis, 2013)

In 1609, Galileo heard rumours of a spyglass having been created by a Dutch spectacle-maker. Galilei decided to create his own spyglass, later renamed a telescope, and eventually made it more powerful than the Dutch spyglass. One night, he pointed his telescope towards the sky and his astronomical discoveries began then. (Bellis, 2013)

Topic sentence of paragraph 2: Prior to Galileo’s astronomical contribution, the Catholic Church and the Bible were the principal sources of explanation for most of the phenomena that occurred on Earth and in space.

In that time period, the geocentric model, suggested by Claudius Ptolemy at the beginning of the 2nd century A. D., argued that the Earth was in the center of the solar system and that the other planets and the Sun revolved around it. This model was widely accepted and encouraged by the Catholic Church. (Moché, 2009; Redd, 2013)

However, a more recent model had been brought forward by Nicholaus Copernicus, in 1543. This model was called the heliocentric model and declared that the Earth was not in the center of the solar system, but rather that this place was occupied by the Sun and that all the planets, including the Earth, rotated around the Sun. (Moché, 2009; Redd, 2013)

Galileo Galilei supported the Copernican theory (“ Galileo Biography,” 2013), but this theory was considered against the teachings of the Church. As a result, Copernicus’ writings were banned by the Church. (Machamer, 2009; Moché, 2009)

Topic sentence for paragraph 3: Galileo Galilei made more than one contribution to the field of astronomy by observing the sky with his telescope, but his major discoveries were the first moons of Jupiter and the phases of Venus.

His two major discoveries provided proof that the heliocentric model, introduced by Copernicus, was truly the one that was representative of the solar system. (Moché, 2009; Weisstein, 2007)

The moons of Jupiter (\*the names of those moons will be included in the final essay\*) that Galileo observed rejected the geocentric model’s argument against the Copernican theory. This argument stated that if the Sun was the center of the solar system, Earth would lose its moon because it circulated around the Sun; Earth could only keep its moon if it was in the center. However, with the moons of Jupiter (later named the Galilean moons in honour of Galileo) rotating around Jupiter, the scientist community could only face the fact that a planet could keep moons, even though it was not in the center of the solar system. (Moché, 2009; “ Galileo Biography,” 2013)

The phases of Venus further encouraged the heliocentric model. The phases of Venus indicated that Venus must circle the Sun for its phases to be visible from Earth, just like the phases of the moon were. In the geocentric model, Venus would show no phases and would always be a crescent shape because

the Sun would not be in the center of its orbit. (Moché, 2009; “ Galileo Biography,” 2013)

Topic sentence of paragraph 4: Although Galileo’s observations and discoveries were not first accepted by the religious community, evidence of Galileo’s findings started to circulate and the Church was eventually forced to admit that Galileo had been right. (“ Galileo Biography,” 2013; Bellis, 2013)

Galileo had already published multiple books (\*the names and dates will be included in the final essay\*) prior to being charged of heresy by the Church and placed under house arrest. (“ Galileo Biography,” 2013; Bellis, 2013)

While being under house arrest, Galileo continued to write and publish books (“ Galileo Biography, 2013; Bellis, 2013), although he was becoming blind from having stared too much at the Sun with his telescope for another of his astronomical discoveries. (“ Our solar system,” 2011)

In 1758, the Church was forced to face the truth and lifted the ban on most of the books that supported the Copernican theory and the heliocentric model. In 1835, it abandoned its opposition against this model completely. (“ Galileo Biography, 2013)

In the 20th century, some popes acknowledged the revolutionary work done by Galileo. In 1992, Pope John Paul II publicly apologized and showed regret on how the case of Galileo had been dealt with. (“ Galileo Biography,” 2013; Bellis, 2013)

Conclusion

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Restatement of thesis statement: Galileo Galilei significantly contributed to astronomy primarily by observing the sky with a telescope, which resulted in his discovery of many astronomical phenomena proving that the Earth was not the center of the solar system.

Summary of main points: Prior to Galileo's findings, the Church believed in the geocentric model, introduced by Claudius Ptolemy. However, Galileo's discovery of the moons of Jupiter and the phases of Venus instead supported the heliocentric model, suggested by Nicolaus Copernicus. Galileo's contribution took a long time to be recognized, but it allowed for a better understanding of the way the solar system functions.

Other discoveries based on the astronomer's contribution: Galileo's use of a telescope to observe the sky also allowed him to observe the Sun's dark patches known as sunspots, part of the star cloud of the Milky Way, the rings of Saturn that he identified as "ears," and the Moon's crater-covered surface. (Moché, 2009) There is also recent evidence that Galileo may have discovered Neptune nearly two centuries before it was official found by satellites and modern telescopes. (Redd, 2013)

## **APA References**

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\*\*\* Most of these sources are preliminary sources (i. e.: websites). For the final essay, I will find books or other academic sources to replace them, particularly for Galileo’s biography.\*\*\*

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