



OU History of Science Collections

# Discovering



*The original  
Renaissance man  
struts his stuff  
across OU's three  
campuses this  
fall with rare  
handwritten  
works and  
interactive  
galleries that  
deliver the cosmos  
into the viewer's  
outstretched palm.*

The name "Galileo" conjures an unmatched brilliance and inspiration that flows throughout the sciences and the arts, across the barriers of cultures and continents, and beyond the span of centuries.

"In the story of the emergence of modern science, few figures are as significant, colorful or poignant as Galileo Galilei," says Kerry Magruder, curator of OU's History of Science Collections.

As the driving force behind "Galileo's World: An Exhibition Without Walls," he has helped craft a stunning, comprehensive exhibit that showcases Galileo's innovative work at seven locations across University of Oklahoma campuses in Norman, Oklahoma City and Tulsa.

The university will juxtapose the "Galileo's World" exhibits with that of OU's modern academic environment, showing off 12 of Galileo's original books, including four with original handwriting and annotations from the Italian scientist and scholar who was born in 1564 in Pisa, Italy.

The in-depth, interdisciplinary exhibition features tools, writings and manuscripts more than 400 years old and was developed as a way to reveal the organic connections between science and the arts in celebration of OU's 125th anniversary.

Galileo, considered the founder of modern science, made sensational discoveries with his self-built telescope, revealing in March 1610 through his booklet, *The Starry Messenger*, some of his heavenly discoveries, which would later create a scientific and religious furor.

He wrote that the moon was not flat and smooth, but rather a sphere with mountains and craters. He also discovered and wrote that Venus had phases like the moon, proving it rotated around the sun, and that Jupiter had revolving moons.

Prior to the publication of *The Starry Messenger*, Galileo's telescope was used by Venetian merchants for spotting ships in hopes they could get advance notice of the "futures market." In turn, the Venetian Senate offered the professor an increase in salary.

# Galileo

BY TIM FARLEY



As the OU exhibits show, Galileo's work impacted a plethora of other modern academic disciplines, including aerospace, meteorology, music, art, medicine, natural history, religion, philosophy and even sports.

"The joy of looking into the past is seeing if any lost connections are worth recovering," Magruder says. "Although Galileo's work is in every science textbook, people don't have an understanding of his world and the way all of his endeavors fit together across the sciences and humanities."

Galileo, an accomplished lute player, combined math, music and physics to show that the relationship between a lute's string length and the note it produced was mathematical. Galileo recognized a lute string would always play the same note regardless how hard the musician hit the string. But, if the length of the string were changed, the musical note changed as well.

Fascinated by the movement of pendulums, Galileo also noted that if the length of the pendulum's string was constant, it didn't matter how hard the pendulum swung – it always moved back and forth at the same rate.



Hugh Scott

OU School of Electrical and Computer Engineering Research Associate John Dyer prepares to test a ball-drop experiment atop a 16-foot Leaning Tower of Pisa replica that invites Bizzell Memorial Library visitors to recreate Galileo's famed test of mass and acceleration. Dyer's help in creating the tower underlines the cross-disciplinary sharing that *Galileo's World* has brought to OU.

struments used by Galileo in his scientific research. "They've been certified as exact copies," she says.

All "Galileo's World" events and exhibits are free, open to the public and considered family friendly. Participating venues are Bizzell Memorial Library, the Sam Noble Museum, the National Weather Center, the Fred Jones Jr. Museum of Art, Headington Hall, the Robert M. Bird Health Sciences Library and the OU-Tulsa Schusterman Library.

"All of this provides a renewed sense

of meaning and joy with the vast resources of the university that make a difference for our students, the community and world," Magruder says.

The Robert M. Bird Library at the OU Health Sciences Center in Oklahoma City is hosting "Galileo and the Health

Galileo were on campus today, Coach (Bob) Stoops would want him on staff."

In fact, the power of sports had a role in "Galileo's World." The OU Athletics Department purchased an original manuscript by Oratio Grassi; a work on Renaissance art and Galileo by Lorenzo Sirigatti; and a dialogue written by Galileo's father, Vincent Galilei, on ancient and modern music.

But perhaps the most impressive Galileo exhibit is a writing he prepared about an engineering compass, one of only 60 Galileo manuals ever printed.

"It is his first and rarest book," Magruder says.

Each of Galileo's books will be digitized and placed on the university website for researchers across the globe, says project coordinator Chelsea Julian. In addition, Museo Galileo in Florence, Italy, has loaned OU five fine-quality replicas of in-

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Galileo's work in physics also had a tremendous impact on sports, which involves athletes bending, running and jumping in all directions at various speeds.

"You can't understand the forces and dynamics of sports without a good understanding of physics," Magruder says. "If





Galileo, Sidereus Nuncius (Venice, 1610).



The first printed edition of Euclid's 1482 *Elements of Geometry* formed the starting point for a mathematical approach to physics. The book features hand-colored woodcuts; to create the perfect geometric shapes seen at right, the printer used a groundbreaking process in which wire was imbedded into wet plaster.

Sciences” through April 2016. Guests will discover that the young Galileo studied medicine and was once called as an expert witness in court. However, medicine was not his passion. A fascination with math and science derailed his plans to become a doctor, but Galileo retained connections to the medical world. A close friend, a physician in Venice, invented the pulsilogium, a device used to measure the pulse. One of the first-edition works held by OU contains an inscription by Galileo to another physician in Venice. In addition, the use of artistic illustrations for anatomical purposes remains among the most striking developments of medicine during Galileo’s time.

Among featured books at the Bird Library is *On the Fabric of the Human Body*, written by Andreas Vesalius in 1543. It is considered the best-known work of early modern anatomy. Vesalius was fortunate to partner with Jan Stephan van Calcar, a world-class artist who provided images of human skeletons. The images in the book are often regarded as Vesalius’ major contribution to Renaissance medicine because the two fields—medicine and art—converged to provide this comprehensive publication.

“It is definitely a unique and rare opportunity to view this exhibit,” says Joy Summers-Ables, director of the Bird Library. “Typically, people don’t have the chance to look at something



of this age. We're very excited to see an artifact like this, and having it in our facility is incredible."

Meanwhile, the Schusterman Library at the OU-Tulsa campus will host "Galileo and the Scientific Revolution" through December. This exhibit features an all-digital display that highlights works on several large monitors illustrating the multi-disciplinary nature of discovery from the Scientific Revolution and its applications to modern research in the 21st century.

"We're hoping people see Galileo in a larger context as we present the breadth of his work," says April Schweikhard, director of the Schusterman Library. "It's exciting on so many different levels, showcasing what OU has to offer."

One of the most controversial times in Galileo's life was his battle with the Catholic Church, a fight that lasted 32 years. The controversy started with the scientist's publication of *Starry Messenger*, which promoted Nicolaus Copernicus' heliocentrism theory that places the sun near the center of the universe, motionless, with Earth and the other planets rotating around it at uniform speeds. *Starry Messenger* was based on Galileo's use of his telescope and his study of astronomy, the stars, moon and planets.

Many falsely believe that the Church decried Galileo's work as heresy, Magruder says. "When Galileo published *Starry Messenger*, he was invited to Rome to show the telescope to Jesuits, who feasted him and publicly honored him as the leading light of Tuscany...Some of Galileo's strongest supporters were in the Church;

some of his strongest opponents were physicists in the universities who lacked training in mathematics and were not able to comprehend either his astronomy or his physics."

The Roman Inquisition issued "corrections" to Copernicus' work, and his ideas on heliocentrism were permitted to be taught as theory rather than truth. Many years later, Galileo,

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now an old man, published his *Dialogue Concerning the Two Chief World Systems*, which defended heliocentrism as truth. It was an instant hit, but Galileo was placed on trial by the Inquisition in 1633. Publicly humiliated, blind and elderly,



Two-year-old Quinn McDermott (right), gets hands-on with the opening display of the Sam Noble Museum's *Eyes of the Lynx: Galileo, Natural History and the Americas*. The exhibition investigates contributions of the Academy of the Lynx, an early scientific society that counted Galileo among its members. Looking on (from left) are Lessye Cam holding daughter Addison, and Quinn's mom, Gabrielle McDermott.

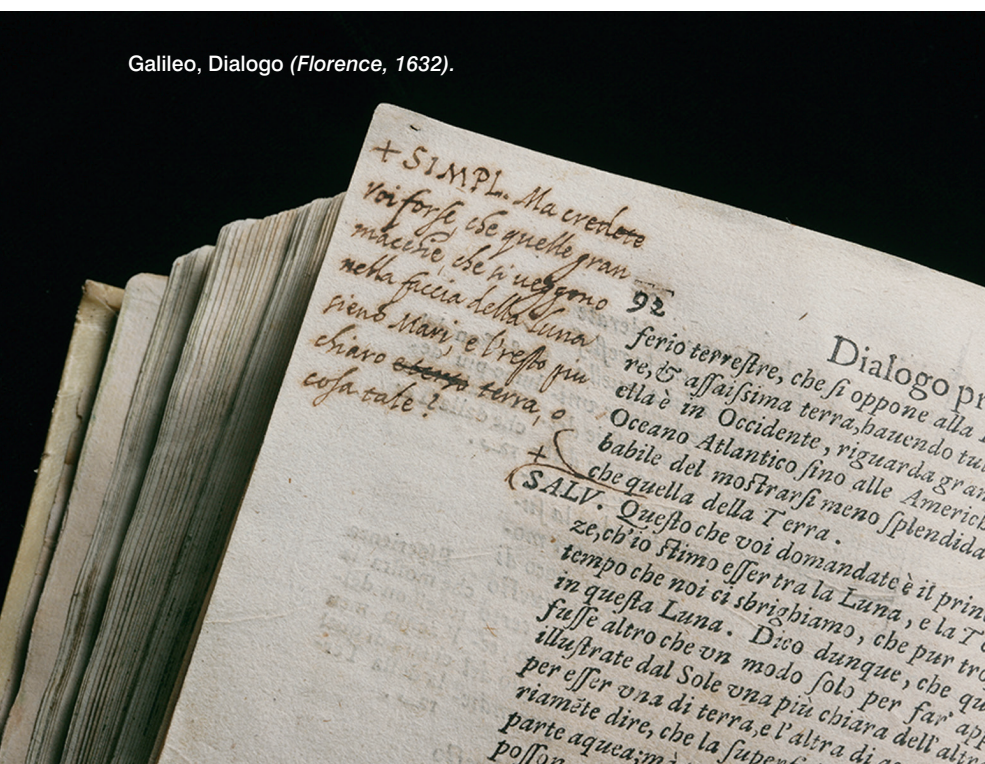




Hugh Scott

Kerry Magruder, curator of *Galileo's World* and OU's History of Science Collections, discusses works on display in the *Controversy Over the Comets* exhibition on the fifth floor of Bizzell Memorial Library.

Galileo, *Dialogo* (Florence, 1632).




OU History of Science Collection

he was held under house arrest in a comfortable home with servants until his death in 1642.

The story of what Magruder calls, “the complex interaction between the Bible and science, for better and for worse,” is featured in Bizzell Library’s “The Galileo Affair” exhibit, which includes the *Dialogue* with marginal annotations and Galileo’s letter to the Grand Duchess Christina reconciling the Bible and Copernicus. The library, located on the Norman campus, also will feature exhibits titled, “A New Physics,” “Controversy Over the Comets,” “Galileo and China,” “Galileo and the Quest for Other Worlds,” “Galileo Today,” “Galileo, Engineer” and “Music of the Spheres.”

“Galileo’s culture, wide open to new possibilities, has become part of our own history, connecting us to the past and to the world,” Magruder says, adding that the “Galileo’s World” exhibit draws parallels to OU’s own, current-day scientific influence.

“Galileo invented a new physics by writing in a Tuscan dialect; OU’s research enterprise now impacts the world, producing science with an Okie accent. In architecture, art, literature and the humanities, and in science and engineering, ‘Galileo’s World’ throws light upon the Oklahoma experience and OU in its 125th anniversary.”

A complete list of “Galileo’s World” events, exhibits and their locations, dates and times can be found at [www.galileo.ou.edu](http://www.galileo.ou.edu). 

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