

Honor Read Pythagoras
IDH 2930 Section 14F7
Class Periods: Tuesday, period 10, 5:10 pm – 6:00 pm
Location: HUME 0119
Academic Term: Spring 2018

Instructor:

Distinguished Professor Panagote (Panos) M. Pardalos, <http://www.ise.ufl.edu/pardalos/>
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Office Hours: By appointment, WEIL 401

Teaching Assistants:

None

Course Description

The Music of Pythagoras

In this class, we are going to explore the connections between mathematics and music. The Pythagorean tuning is known as a system of musical tuning in which the frequency ratios of all intervals are based on the ratio 3:2. The Pythagoreans related numbers to music; they discovered the concept of irrational numbers and developed the theory of cosmos (order of the world).

The words mathematics, music, muse, and mother each have the same root in the Indo-European languages. Therefore, it is not surprising that these concepts are deeply and intrinsically connected.

In addition to Pythagoras, we are going to discuss several other ancient Greek mathematicians, including Euclid, Archimedes, Zeno, and Hypatia.

The key source for the class will be "The Music of Pythagoras: How an Ancient Brotherhood Cracked the Code of the Universe and Lit the Path From Antiquity to Outer Space" (See this link for details: https://www.goodreads.com/book/show/868121.The_Music_of_Pythagoras)

This book contains the enthralling story of Pythagoras and the Pythagoreans, whose insights transformed the ancient world and still inspire the realms of science, mathematics, philosophy, and the arts.

"Pythagoras's influence on the ideas, and therefore on the destiny, of the human race was probably greater than that of any single man before or after him," wrote Arthur Koestler. Though most people know of him only for the famous Pythagorean Theorem ($a^2 + b^2 = c^2$), in fact the pillars of our scientific tradition – belief that the universe is rational, that there is unity to all things, and that numbers and mathematics are a powerful guide to truth about nature and the cosmos- hark back to the convictions of this legendary sixth-century B.C. scholar.

Born around 570 B.C. on the cultured Aegean island of Samos, Pythagoras (according to ancient tales) studied with the sage Thales at nearby Miletus, and with priests and scribes in Egypt and Babylon. Eventually he founded his own school at Croton in southern Italy, where he and his followers began to unravel the surprisingly deep truths concealed behind such ordinary tasks as tuning a lyre. While considering why some string lengths produced beautiful sounds and others discordant ones, they uncovered the ratios of musical harmony, and recognized that hidden behind the confusion and complexity of nature are patterns and orderly relationships. The ancient Pythagoreans believed that they had surprised the Creator at his drafting board and had glimpsed the mind of God!

Some of them later would also find something darker in numbers and nature: irrationality, a revelation so unsettling and subversive that it may have contributed to the destruction of their brotherhood.

Praised for her ability to illuminate complex subjects, Kitty Ferguson brilliantly evokes the archaic world of Pythagoras, showing how ideas spread in antiquity, chronicling the influence he and his followers have had on so many extraordinary people in the history of Western thought and science, and bringing a poignant human saga to readers who are reminded daily that harmony and chaos can and do coexist.

Course Pre-Requisites / Co-Requisites

None

Materials and Supply Fees

No fees.

Required Textbooks and Software

Textbook: The Music of Pythagoras: How an Ancient Brotherhood Cracked the Code of the Universe and Lit the Path from Antiquity to Outer Space, by Kitty Ferguson, 2008, hardcover, 366 pp., ISBN 9780802716316, \$26.95, Walker and Company, New York, www.walkerbooks.com

Additional material for discussions: <http://www.ams.org/samplings/math-and-music>

Attendance Policy, Class Expectations, and Make-Up Policy

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Grading Method and Policy

Students will read the book "The Music of Pythagoras: How an Ancient Brotherhood Cracked the Code of the Universe and Lit the Path from Antiquity to Outer Space" and each week will engage in discussions to provoke questions on the subject.

Students Requiring Accommodations

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu/evals>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received

unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Campus Resources:

Health and Wellness

U Matter, We Care:

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.
<https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.

Teaching Improvement

We are interested in being the best instructors possible. In particular, we would like to know of the problems you face during the semester as soon as they occur. It is a waste for us to learn at the end of the semester that we were not speaking sufficiently loud to be heard, that our handwriting was not readable or that nobody understood the pictures that were drawn on the board. We want you to feel free to make suggestions to improve the content of the class, its exposition and our instructing skills. You can address these suggestions directly to us (in a polite manner) or anonymously by leaving comments in the instructor mailbox. We will consider carefully all these suggestions and if necessary, we will address them in class.

Feedback

If you foresee any problem with adhering to the guidelines set in this syllabus, please discuss them with the instructor as soon as possible. The sooner problems are discussed, the more likely it is that they can be solved.