

# SYLLABUS for course ASTB03, Winter 2018

Title: Great Moments in Astronomy  
Lecturer: Prof. Pawel Artymowicz  
location and time: Mon 7-9pm in MW110

Calendar of lectures (L1-L24) and exams

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## **8 Jan L1-2:**

Organization of the course.  
A tour of our Universe.

## **15 Jan L3-4:**

The ancient anonymous discoverers of sky cycles and planets,  
from caves to Ptolemy.  
Greek atomists predict plurality of worlds: Leukippus, Democritus

## **22 Jan L5-6:**

Platonists: from Pythagoras, via Plato and Aristotle to Ptolemy  
Mikolaj Kopernik: Scientific revolution begins.

## **29 Jan L7-8:**

(Kopernik: continuation)  
Tycho Brahe: the greatest pre-telescopic discoveries  
Johannes Kepler: a mystical theorist sets out to read the mind of God  
and finds the laws of Nature

## **5 Feb L9-10:**

(Kepler: continued)  
Galileo Galilei: the first telescopic discoverer; but a science martyr?  
Hooke, Halley, Newton: rivalry and collaboration that produced the  
greatest book in the history of science

## **12 Feb L11-12:**

Hooke, Halley, Newton: continuation  
Astrophysicists and their power tool: the spectroscope does the impossible

**19 Feb** - winter break

**26 Feb L13-14:** (##### L13 is an in-class midterm at 19:00)

Who discovered Uranus and Neptune?  
The telescope race: Herschel and Rosse

**5 Mar L15-16:**

The telescope race: James Lick  
The 1920s Great Debate: the different universes of Curtis and Shapley  
Hubble and the world of galaxies.  
19th century women find the way to measure the universe

### **12 Mar L17-18:**

Einstein and astronomers  
Meter sticks to measure the universe  
The realm of galaxies

### **19 Mar L19-20:**

The realm of galaxies  
Friedmann, Lemaitre, Hubble and the expanding universe  
White dwarfs and black holes arrive on a steamship from India

### **26 Mar L21-22:**

Pulsars: Discovery and physics  
Black holes: history of the concept  
Black holes: low-mass black holes as endpoints of stellar evolution  
Supermassive black holes  
The dark dominance: dark matter

### **2 Apr L23-24:**

The dark dominance: dark energy in modern cosmology  
Extrasolar planets. Wolszczan, Mayor, Marcy, and others.  
Current understanding of solar and extrasolar systems.  
SETI (search for extraterrestrial intelligence)  
Space missions.

?? Apr FINAL EXAM:

2.5 hr duration, TBA

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