

**SYLLABUS: FSP 114-H2**  
**CONCEPTIONS OF THE COSMOS**  
**Fall 2013**  
**Prof. Paul J. Wiita**

**Timings:** Mondays and Thursdays, 10:00—11:20 AM; **1.0 Course Unit**

**Location:** P-116, Science Complex (though we will look for a better room)

**Prerequisites:** Honors Program membership

**Contact Information:** [witap@tcnj.edu](mailto:witap@tcnj.edu), Room SCP-124, Phone, 609.771.2846

**Office Hours:** Mondays and Thursdays, 1:30—3:00 PM, and by appointment

**Required Texts:**

- 1) Marcello Gleiser, **The Dancing Universe: From Creation Myths to the Big Bang**, Dartmouth College Press, Hanover, NH, 2005
- 2) Barbara Sproul, **Primal Myths: Creation Myths Around the World**, Harper Collins, New York, NY, 1991
- 3) Anton Pannekoek, **A History of Astronomy**, Dover Press, 1989

**Recommended Text:**

Milton Munitz, ed., **Theories of the Universe: From Babylonian Myth to Modern Science**, Free Press, Glencoe, IL, 1957 (find this online)

Any recent Astronomy Textbook will be helpful, but not necessary

**Course Description:**

**General:** As the cornerstone of the College's Liberal Learning Program, First Seminar is designed to provide all first-year students with an intellectually exciting and challenging experience taught by faculty mentors in a living-learning environment. Each seminar is designed around a topic selected for its special interest by an individual professor. Students are encouraged to use the First Seminar to deepen their current interests or to explore new academic opportunities. Each seminar is limited to about 18 students, is writing intensive, and demands the active participation of all students. Limited to first-year students; does not fulfill major requirements.

**Particular:** This course will consider fundamental questions about the universe we live in. How big is the universe? How old is it? What is it made of? How did it form and change? Students will consider, in an historical context, philosophical and scientific thoughts about the universe as a whole, a subject we call cosmology. Peoples in ancient civilizations around the world (e.g., Mesopotamia, China, India, Egypt, Mesoamerica) pondered these key questions and some of their creation stories will be explored. Scientists have also been exploring these questions using the scientific method and we will discuss the evolution of these conceptions of the cosmos. The course will end with non-mathematical discussions of modern ideas about the universe, such as the dominance of dark matter and dark energy and the possibility of the existence of multiverses: other parallel universes.

### **Purpose of this Course:**

This course is designed for intelligent freshmen who want to explore the ways in which various civilizations have attempted to make sense of the earth and the sky around them and humanity's place within them. This exploration will be carried out through reading, discussion, lectures and writing. All students will read every week and are expected to be ready to discuss that material during each class session. You will also write at least three formal papers and will do several short writing exercises in class. We will devote time to learning how to write a college level paper and to evaluate papers of our peers.

The beautiful subject of cosmology contains much knowledge that all nominally educated people should have, so you are fortunate to be able to study this subject as you begin your college career. This course will contribute to the development of logical thought and careful expression through the formulation and discussion of significant problems. You will also develop stronger writing skills as you discuss these important problems. Your understanding of these concepts will be evaluated through two exams during the semester, your participation in discussions and three papers that will go through at least two iterations, including a major term paper.

### **Course Outline:**

#### **1) Creation Myths and the Birth of Cosmology**

Readings and discussion of ancient civilizations, including some from Africa, Asia, Europe and the Americas (3 weeks) – short paper due in 3<sup>rd</sup> week

#### **2) Development of Astronomy in Ancient Greece and the Islamic world (2 weeks)**

– first exam will cover these first two portions

#### **3) The Scientific Method and Astronomy from Copernicus through Newton**

(3 weeks) – medium length paper due in the 8<sup>th</sup> week; --second exam will cover these second two portions

#### **4) Discovery of Galaxies and the Expanding Universe (2 weeks)**

#### **5) Our Current Understanding of the Universe (3.5 weeks):**

Big Bang, Inflation, Dark Matter, Dark Energy and Speculations (string theory, multiverses) – long paper due at the beginning of final exam week.

### **Determinants of Grades:**

**1) Two term exams @ 20 points each: 40 points**

**2) First (3 page) paper: 5 points**

**3) Second (6 page) paper: 15 points**

**4) Final (12 page) paper: 30 points**

**5) Class participation, including peer instruction and evaluation: 5 points**

### **Grading Scale:**

<b>Final total</b>	<b>Letter Grade</b>	<b>Final total</b>	<b>Letter Grade</b>
93-100	A	77-79.9	C+
90-92.9	A-	73-76.9	C
87-89.9	B+	70-72.9	C-
83-86.9	B	67-69.9	D+
80-82.9	B-	60-66.9	D
		0-59.9	F

### **Contact Policy:**

You may call me, but e-mails are the best way to contact me if you can't wait until office hours. During the week, I will typically respond within 4 hours between 7 AM and 10PM. On weekends I will usually check e-mail at least once a day. I have 3 formal office hours per week but if you have another class during those periods make an appointment to see me at another time. Aside from that, whenever I am in my office and not in a meeting (which are unfortunately frequent for a department Chair) I will be happy to talk to you about the course or anything else.

### **Class Attendance and Examination Policy:**

Students are expected to attend every class and participate in discussions and peer instruction. If a student will have a known excused absence (e.g., representing the College on a team), notify me early in the term. You should send me an email after any class you miss explaining why you did so; absences of 2 consecutive class meetings require a doctor's note. See the College Attendance Policy below.

If you miss the first term exam, the second exam will count at 40 percent of your final grade instead of 20 percent. If you miss the second exam, I will give you an oral make-up exam. If a paper is late by less than the beginning of the next class meeting it will be accepted but your grade will be reduced by 10 points out of 100; if it is no later than the next class meeting it will be reduced by 25 points and will not be accepted after that date. The final paper MUST be turned in by the specified date.

### **Other Important Things:**

**Details of reading and writing assignments, along with a more detailed course schedule will appear on Canvas. Students should make a habit of checking Canvas every day for updates on this and other courses. You are responsible for all assignments given in class or posted to Canvas.** All papers will have two drafts turned in to the instructor, and preliminary drafts of those papers will be shared with other students who will be expected to give constructive criticism.

**Academic integrity is critical to the advance of knowledge and you are responsible for knowing the College policy given below.** In summary, you must not copy any material from other students on assignments or exams or utilize material from any printed or online source in your papers without giving that source appropriate credit, including quotation marks of any material that you copy and a careful citation of any material you paraphrase. **The penalties for violating the academic integrity policy are severe, with the minimum one being failure on the particular assignment, but failure for the course, suspension and expulsion from the College can occur for repeated violations.**

**If necessary, minor variations to this syllabus may be made!**

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## **SELECTED OFFICIAL TCNJ POLICIES**

### **Final Evaluations**

TCNJ's final examination policy is available on the web:

<http://policies.tcnj.edu/policies/digest.php?docId=6242>

### **Attendance**

Every student is expected to participate in each of his/her courses through regular attendance at seminar and colloquium sessions. It is further expected that every student will be present, on time, and prepared to participate when scheduled class sessions begin. While attendance itself is not used as a criterion for academic evaluations, grading in this course is based on participation in class discussion so a student may be penalized for failure to perform satisfactorily in the required activities. No make-ups or extensions will be given unless a student has a genuine emergency. If a student misses an exam or assignment deadline they must contact the instructor within 36 hours to explain the situation; otherwise the student will earn a zero for that exam or assignment. Students who must miss classes due to participation in a field trip, athletic event, or other official college function should arrange with their instructors for such class absences well in advance. In every instance, however, the student has the responsibility to initiate arrangements for make-up work.

TCNJ's full attendance (absence) policy is available on the web:

<http://recreg.pages.tcnj.edu/policiesprocedures/>

### **Academic Integrity Policy**

Academic dishonesty is any attempt by the student to gain academic advantage through dishonest means, to submit, as his or her own, work which has not been done by him/her or to give improper aid to another student in the completion of an assignment. Such dishonesty would include, but is not limited to: submitting as his/her own a project, paper, problem set, report, test, or speech copied from, partially copied, or paraphrased from the work of another (whether the source is printed, under copyright, or in manuscript form). Credit must be given for words quoted or paraphrased. The rules apply to any academic dishonesty, whether the work is graded or ungraded, group or individual, written or oral.

TCNJ's academic integrity policy is available on the web:

<http://policies.tcnj.edu/policies/digest.php?docId=7642>

### **Americans with Disabilities Act (ADA) Policy**

Any student who has a documented disability and is in need of academic accommodations should notify the professor of this course and contact the Office of Differing Abilities Services (609-771-2571). Accommodations are individualized and in accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1992.

TCNJ's Americans with Disabilities Act (ADA) policy is also available on the web:

<http://policies.tcnj.edu/policies/digest.php?docId=8082>