

Division of Natural Science  
<http://natsci.info.yorku.ca/>  
Course Outline

NATS1525

**Extraterrestrial Life: A Modern Discussion to include Historical, Religious  
and Cultural Aspects**

Fall 2018

Fridays 11:30 am - 2:30 pm

Location: Curtis Lecture Hall A (CLH A)

Course Instructor(s) and Contact Information

- **Instructor:** Dr. Parandis Tajbakhsh ([tajbakhs@yorku.ca](mailto:tajbakhs@yorku.ca))
  - **Course email address:** [NATS1525@yorku.ca](mailto:NATS1525@yorku.ca)
  - Please note that any inquires of non-personal nature must be sent to this email address.
  - It is strongly suggested that your emails be sent from [@my.yorku.ca](mailto:@my.yorku.ca) email as others including, hotmail, gmail, yahoo.... may be filtered and never make it to the intended course mailbox or professor's mailbox.
  - Please allow up to 48 hours for someone to get back to you (it might take longer to receive a response during the weekends)
- **Office hours:** Fridays, 10-11 am (by appointment)
- **Office Location:** 207A Bethune College

**Email Policies and Etiquette**

- In sending emails, please note the following:
  - When sending a message to the course mailbox or to the professor's mail box, please make sure that your subject line reads: **NATS1525 - Your Full Name**
  - In every email, please include **your full name** and **student number**.
  - Your emails must be written in clear sentences without using slang, text lingo or vulgar terms. Always remember that this is an academic correspondence.

Expanded Course Description

This course is an examination of the history of humankind's search for life beyond Earth as a prime example of the interaction between science and religion. With an introduction to the beliefs of ancient Greeks, this class embarks the students on a journey to explore how these ideas influenced the position of early Christians on the issue of plurality of the worlds. The role of condemnations of 1277 along with the Copernican revolution in gradually leading to the revision of earlier convictions and eventually resulting in a widespread belief in the abundance of intelligent life in the universe is investigated. To this end, the views of Galileo, Kepler, Huygens, Newton, Voltaire, Paine, Gauss, Darwin, Tesla and many others are examined. A number of historical novels, such as Kepler's *Somnium* and Voltaire's *Micromegas* with extraterrestrial themes are explored. The development of the rare Earth hypothesis in the 19th century, as a religious response to the strongly anti-Christians objections based on plurality of the worlds, is examined. This historical examination will be complemented with a discussion of the resurfacing of a number of these objections following the recent discoveries of thousands of exoplanets. Areas of tension between the concept of extraterrestrial intelligence and beliefs of the followers of Abrahamic religions are explored. Finally, there will be a discussion of the phenomenon of contactees and abductees following the introduction of the Fermi's paradox.

## Course Learning Outcomes

Upon successful completion of this course students should be able to:

- describe key concepts of extraterrestrial life debate and their origins
- analyze the main historical causes of the clash between the belief in the existence of extraterrestrials and Abrahamic religions.
- describe the importance of extraterrestrial life debate as a modern frontier for the interaction of science and religion.
- explore the spectrum of the religious positions with regard to a potential discovery of extraterrestrial life.
- explain the basics of our knowledge about extra-solar planets and their conditions to sustain life.

## Evaluation

- **Eight weekly in-class tutorials** (the best 7 will be considered) worth **14%**
- **Attendance** (iClickers) worth **5%**
- **Essay** (due on **November 23rd** at 11:50 pm) worth **16%**.
- **Midterm** (to be held on **October 22nd** during class time) worth **25%**
- **Final** (cumulative) worth **40%**
- In order to be fair and consistent to the entire class, individual grades are not negotiable and “extra credit” assignments are not provided at any point during or after the course. Please contact the instructor about a grade **only** if there is a clear error (calculation, clerical, etc.) **within two weeks** of the grade being made available to you.”

***The penalty for late submission of the essay is 10% for the first day after the due date and 20% for each additional day.***

- It is the student’s responsibility to be available for all the evaluation elements of this course. Please note that there is no make-up for any missed component of this course. If for any reason you cannot attend the tutorials, midterm or final, you will need to inform me **before-hand** and by no means I can guarantee that I accommodate you but I will make every effort to do so. If you happen to miss a test or tutorial due to illness, you will need to provide a completed “Attending Physician’s Statement” form which can be found here ([http://www.cse.yorku.ca/~utn/attending\\_physician\\_statement.pdf](http://www.cse.yorku.ca/~utn/attending_physician_statement.pdf)). Please note that I **cannot** accept “ ‘Patient was ill’ or ‘Off school’ scribbled on little prescription pads”. Further, please heed the fact that “Attending Physician’s Statement” form must indicate that the doctor diagnosed and treated you **when** you were ill; it cannot just report that you told the doctor after-the-fact that you were ill previously. See the Petition section in the Calendar.

## Course Materials

- iClicker software (free) on your smartphone or laptop

## Laboratory/Tutorial

- This course has eight in-class tutorials.
- The tutorials are done in groups of 4-5 people and are intended to provide a means for the students to compare and contrast what was speculated in the past about ET life with what is currently known as scientific facts. Your TAs are going to be available during this time to help answer potential questions. Please note that it is your responsibility to know to which group you are assigned (group assignments will be posted on moodle before the first tutorial).
- You must ensure that your name and your student number is entered on the front page of the tutorial book
- It is an academic offence to add the name of a member of the group who is not present. This will result in your entire group receiving a mark of 0 for that tutorial.
- Please regularly check moodle to see whether your tutorial mark has been updated or not. If there is a change in your mark, it is your responsibility to follow up with the TAs so that the change of mark is reflected.

## Course Content and Format

### Outline of Lectures (only an approximate guide):

- Beliefs of Ancient Greeks with a focus on Aristotle and Atomists. Views of Augustine, Aquinas, Cusa and some other important figures will be reviewed. Condemnations of 1277 will be discussed.
- Copernican Revolution and its importance in developing a new line of argument for the existence of ET life. Views of Bruno will be discussed.
- Tycho, Kepler and Galileo, the telescope and life in the solar system. Concept of teleology is introduced. Extensive discussion of the novel *Somnium (1634)*.
- Positions of Newton, Huygens and Fontenelle and Voltaire will be discussed. A detailed look at the Novel *Micromegas (1752)*
- Enlightenment Astronomers and their beliefs. Views of Wright, Kant and Herschel will be discussed and contrasted to our modern understanding of extraterrestrial life.
- Thomas Paine and Extraterrestrials
- ET and religious thoughts in the 19th century. The great moon hoax and the canals of Mars controversy are discussed.
- Modern debates in the field of ETs, including look at contactees and abductees
- Modern position of Abrahamic religions with regard to ETs

## Math Content

- There is little math required for this course but you are expected to be familiar with grade 10 mathematics content.

## Course Policies

- **Questions and Concerns should be directed to**
  - Any question of non-personal nature must be directed to [NATS1525@yorku.ca](mailto:NATS1525@yorku.ca)
  - Please allow 24-48 hours to receive a response.
- **Conduct during Assessments**
  - During the midterm and final exam, you are required to have your York University ID. You will also need to bring a pencil and an eraser. This is all that you need. Any other items (especially cellphones, tablets, laptops and apple watches) must be placed in your backpack underneath your chair.
- **Policy for a Missed Tests/Midterms/Quizzes**
  - Please note that it is your responsibility to be present for all the evaluation components of this course. Attendance is critical in passing this course successfully. If for any reason you cannot attend the tutorials, midterm or final, you will need to inform me **before-hand** and by no means I can guarantee that I accommodate you but I will make every effort to do so. If you happen to miss a test or tutorial due to illness, you will need to provide a completed "Attending Physician's Statement" form. Please note that I **cannot** accept " 'Patient was ill' or 'Off school' scribbled on little prescription pads". Further, please heed the fact that "Attending Physician's Statement" form must indicate that the doctor diagnosed and treated you **when** you were ill; it cannot just report that you told the doctor after-the-fact that you were ill previously.
  - Here are some examples of situations I may be unable to accommodate: Missing Tutorials or attendance mark due to work, vacation or participating in extracurricular activities.
  - In order for me to agree to accommodate you, I will need you to present an acceptable form of documentation (e.g. APS [see NATS Moodle page or Registrar webpage for the most up-to-date form], letter from funeral director, boarding passes with plane ticket....).
- **Policy for a Missed Final Exam**
  - If you miss the final exam, you will need to file a petition and request to write a deferred exam.
- **Late Submissions and Late Penalties**
  - The penalty for late submission of the essay is 10% for the first day after the due date and 20% for each additional day.
- **Reappraisal Requests**
  - If you believe that there has been an error in marking your work, you will want to contact the TA who evaluated your work. Please note that when you request a reappraisal, you will need to provide an acceptable academic merit. "I worked really hard" is not academic merit. but page 546 of the textbook states "xxxxxxx" which is similar to my answer is an academic merit.

## Copyright and Intellectual Property

- Please note that the slides for this course are the intellectual property of the instructor and you may not distribute or upload them on a website without the instructor's permission.

## University Policies

### **Important Sessional Dates**

Includes sessional start and end dates, drop deadlines, and withdrawal dates.

See the Office of the Registrar website at <http://www.registrar.yorku.ca/enrol/dates/>

### **Academic Honesty and Integrity**

Academic honesty requires that persons do not falsely claim credit for the ideas, writing or other intellectual property of others, either by presenting such works as their own or through impersonation. Similarly, academic honesty requires that persons do not cheat (attempt to gain an improper advantage in an academic evaluation), nor attempt or actually alter, suppress, falsify or fabricate any research data or results, official academic record, application or document. Finally, academic honesty requires that persons do not aid or abet others to commit an offence of academic dishonesty, including intentional acts to disrupt academic activities.

Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

#### **Academic Honesty and electronic devices during assessments (e.g. exams)**

- Internet capable and personal storage devices of all kinds must be turned off, including vibrate. These and any other unauthorized material must be placed under the student's chair and should not be accessed at any point during the exam. Failure to comply with directive may be considered a break of academic honesty.
- See <http://registrar.yorku.ca/exams/tipsheet>

Please familiarize yourself with the full Senate Policy on Academic Honesty, found at <http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>

Please also familiarize yourself with the SPARK Academic Honesty tutorial found at <https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>

### **Academic Accommodation for Students with Disabilities**

York University shall make reasonable and appropriate accommodations and adaptations in order to promote the ability of students with disabilities to fulfill the academic requirements of their programs.

The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses.

Please familiarize yourself with the full Senate Policy on Academic Accommodations for Students with Disabilities, found at <http://secretariat-policies.info.yorku.ca/policies/academic-accommodation-for-students-with-disabilities-policy/>

**Note: Students should submit accommodation letters from Counseling and Disability Services (CDS) to the course instructor within the first two weeks of the course or as soon as issued.**

Counseling and Disability Services - <http://cds.info.yorku.ca/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

**Note: A student registered with CDS, and choosing to write with Alternate Exams, is responsible for making the appropriate writing arrangements within the timeframes outlined by Alternate Exams.**

Alternate Exams - <http://altexams.students.yorku.ca/>

### **Religious Observance Accommodation**

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents.

<https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/15/wo/kmHGekTpzKLX6XYKBXYc8M/0.3.4.62.0>

**Note: Students who will have an academic conflict as a result of a religious observance, at any point in the term, should make the instructor aware of such at least three weeks prior to the conflict.**

For conflicts occurring during an official examination period, please complete the Examination Accommodation Form available at [http://www.registrar.yorku.ca/pdf/exam\\_accommodation.pdf](http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf) and submit to your instructor at least three weeks prior to the final exam.

## Division of Natural Science Resources

### **NATS-AID**

Free peer tutoring for students enrolled in Natural Science Courses.

See <http://natsci.info.yorku.ca/nats-aid/>

### **M-AID in NATS (Math Aid)**

Free math help for students enrolled in Natural Science Courses (TA tutors)

See <http://natsci.info.yorku.ca/m-aid-in-nats/>

## Other Resources

### **Learning Commons**

The Learning Commons brings together key supports for your learning: writing, research, learning skills and career services. <http://www.library.yorku.ca/cms/learning-commons/>

### **goSAFE**

goSAFE is a complimentary service provided to the York Community. At the Keele campus, goSAFE has two routes: North Route & South Route which will safely transport community members by vehicle from one specified hub to another on campus. goSAFE operates seven days a week, all year round, including University closures (with the exception at Glendon during the Christmas holiday closure).

Call the goSAFE office at 416-736-5454 or extension 55454 during hours of operation. Please give your name, location and destination. <http://www.yorku.ca/goSAFE/>

### **Mental Health and Wellness at York University**

Outlines a variety of resources available to support mental health and wellness

<http://mhw.info.yorku.ca/resources/resources-at-york/students/>

### **Good2Talk**

Post-Secondary Student 24 hour Helpline

<http://www.good2talk.ca/> 1-866-925-5454