

**Division of Natural Science**

<http://natsci.info.yorku.ca/>

**Course Outline**

NATS 1880 6.0 A, Life Beyond Earth  
FW 2017-18  
Fully On-line

**Course Instructor(s) and Contact Information**

**Course:** SC/NATS 1880 6.0 – Life Beyond Earth  
**Course Webpage:** <https://moodle.yorku.ca/moodle/course/view.php?id=89939>  
**Term:** FW 2017-18

**Course Credit Exclusions:** SC/NATS 1570 3.00, SC/NATS 1740 6.00. NCR (No Credit Retained) Note: Not open to any student in the Astronomy stream nor to any student who has passed or is taking SC/PHYS 1070 3.00, SC/BIOL 1010 6.00, SC/BIOL 1000 3.00, SC/BIOL 1001 3.00 or AP/ANTH 3270 3.00.  
**Prerequisite / Co-requisite:** N/A

**Course Instructors**

First Term (Fall):	Second Term (Winter):
(Professor) Paul Delaney	(Professor) Michael De Robertis
Ext. 77763	Ext. 77761
Petrie Science & Engineering Bldg. 329	Petrie Science & Engineering Bldg. 326
<a href="mailto:nats1880@yorku.ca">nats1880@yorku.ca</a>	<a href="mailto:nats1880@yorku.ca">nats1880@yorku.ca</a>
Office Hours: Thursdays, 11 am - noon	Office Hours: TBD

**Time and Location**

NATS 1880 6.0 is a completely on-line course. While there are no face-to-face classes as such, there will be an opportunity for students to discuss critical course-related or personal matters during Office Hours or via email with an Instructor. An On-line Discussion Forum facilitated by a Teaching Assistant (TA) will always be available to ask course-content related questions. It should be noted that there will be a final exam, **in person, on campus** at the end of each term as detailed below.

**Contacts and Communications**

- A student’s success in any course, but particularly an on-line course depends critically on their level of engagement, which requires clear and consistent communications with the relevant Teaching Assistants (TAs) and Instructors.
- The primary vehicle for communications in this course is the Course (Moodle) Website to which a student should refer **regularly**. The course website will be updated frequently and will contain all pertinent administrative and curricular information, including assignment deadlines.
- The **first level of communications about curricular matters** in this course is through the Discussion Forum on the course website. A Discussion Forum allows students to discuss course-related issues, primarily with other students, but also with TA(s) assigned

to the Forum.

- The second level of communication is via email. Students who, for whatever reason, prefer not to use the Discussion Forums can contact their TAs and instructor via the email address: [nats1880@yorku.ca](mailto:nats1880@yorku.ca). It is **strongly recommended** you use your “my.yorku.ca” account when sending email. Experience has shown that email to/from an external email address may not always arrive successfully through no fault of the sender. Email responses will normally occur within 24-48 hours. Please note though that if a question is course-content related (no personal content), it should be posted to the Discussion Forum so both the question and its answer can be shared among the class as a whole. Questions raised on email that already have been answered on the Discussion Forum may not receive a response.
- Regular Course Announcements from the course instructors will remind you about important dates, administrative aspects of the course and the occasional media-oriented story relevant to the course.
- All members of the course – students, TAs and instructors – should adhere to “common sense” NETiquette guidelines to communicate effectively and courteously on-line, including:
  1. The use of a reasonable ID; e.g., “D. Lee” and not “Joker47”
  2. A specific and relevant subject line
  3. The use of appropriate language, avoiding rudeness, vulgarity and sarcasm
  4. Being concise
- Students who require face-to-face meetings with the Instructor should make use of the Instructors’ Office Hours or book a personal appointment via [nats1880@yorku.ca](mailto:nats1880@yorku.ca).

### Expanded Course Description

Natural Science (NATS) courses are designed to provide an opportunity for non-science students to gain familiarity with the nature of science, its practices, applications and social ramifications which are essential requirements for any fully literate individual of the 21st century. NATS courses also enhance important critical thinking skills, including those associated with basic numeracy and scientific literacy.

In NATS 1880, Life Beyond Earth, students will be able to describe and explain how science works, the nature of and conditions for life on Earth, sites where life may be found in our solar system and in extrasolar systems, how best to detect intelligent life in our Galaxy and how humankind would react if an intelligent civilization were discovered.

### Course Learning Outcomes

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

1. Explain the scientific method, to communicate basic scientific ideas clearly and concisely both orally and in writing.
2. Discuss the microscopic (i.e., biochemical) and macroscopic (i.e., evolutionary and environmental) requirements for life on Earth and where these likely exist elsewhere in our universe.
3. Be familiar with the characteristics of intelligence, be able to estimate the probability that another intelligent species exists concurrently in our Galaxy, and to appreciate what its discovery would mean for humankind.
4. Describe and assess the advantages and challenges associated with active searches for an extra-terrestrial intelligence (e.g., rocket technologies, search strategies, physical limitations), and passive searches (e.g., using radio technologies).
5. Argue the ethical implications for and against the colonization of other planets in the universe and to take an informed position on relevant societal issues such as climate change.

6. Demonstrate critical thinking and reasoning in developing ideas and in assessing reference sources, as well as to criticize constructively.

## Evaluation

### Grading Information (1880)

The final grade for NATS 1880 6.0 will be based on the following items weighted as indicated:

Assessment tasks	Details	Weighting (%)
Group Assignments (GAs) <sup>1</sup>	Total of 4: 2 per term	12.5
Individual Assignments (IAs) <sup>2</sup>	Total of 4: 2 per term	12.5
In-chapter Questions (ICQ) <sup>3</sup>	During each chapter, mix of multiple choice, short answer	10.0
Chapter Completion Assignments (CCAs) <sup>3</sup>	After each chapter, mix of multiple choice, short answer	15.0
End-of-term Examination (Fall) <sup>4</sup> (Date arranged by Registrar's Office)	December: Chapters 1-6, ~120 multiple choice; on campus	25.0
End-of-term Examination (Winter) <sup>4</sup> (Date arranged by Registrar's Office)	April: Chapters 7-13, ~120 multiple choice; on campus	25.0
<b>Total</b>		100.0

<sup>1</sup>The Group Assignments (GAs) will require each group of students to research a particular topic and collaborate on the writing of a final submission. The aim of each of the 4 assignments will be to further enhance the understanding of certain key topics in the course. The total weight of all 4 assignments is 12.5%. The poorest of the 4 submissions will be weighted half of the other three assignments. No make-up options for missing any GA will be available.

<sup>2</sup>The Individual Assignments (IAs) will require each student to research a topic and report their findings in their own words in their submission. To assist in the preparation of the final submission, a "draft" submission normally will be (briefly) assessed by 2 anonymous student peers to provide feedback on the format, content, clarity and overall composition. Adequate time will be provided between the "draft" submission date and the final submission date. The aim of each of the 4 assignments will be to further enhance the understanding of certain key topics in the course. The total weight of all 4 assignments is 12.5%. The poorest of the 4 submissions will be weighted half of the other three assignments. No make-up options for missing any IA will be available.

<sup>3</sup>Chapter Completion Assignments (CCAs) and In-chapter Quizzes (ICQs) are all subject to the "80% Rule." This means that only the best 80% of each of these assessments will count towards the overall grade. This allows students to miss one or possibly more Assignments/Quizzes (e.g., due to illness, forgot to submit, internet issues, etc.) without suffering negative consequences and without having to supply formal documentation. No make-up options for missing any CCA or ICQ will be available.

<sup>4</sup>Two End-of-term exams will be predominantly multiple-choice format using Scantron answer sheets whose dates will be set by the University. It is a student's responsibility to be available for these examinations. The exams will be written on campus. It is a serious matter to miss an exam and may result in a mark of 0 being awarded.

Please note: In order to be consistent and fair 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.

### Course Materials

The course “lectures” (i.e., instructor-narrated videos) will closely follow the textbook, “Life in the Universe,” by Bennett and Shostak (4th edition) which is available in hard-copy or electronic format (available at the York University Bookstore or on-line) Consulting the textbook in whatever format you choose is strongly recommended. Mastering Astronomy (MA) will be automatically packaged with the textbook (at no additional cost) or available “stand alone” at a cost to the student. MA can be a helpful resource but is not required. Along with the textbook and lectures, a number of activities designed to enhance the student’s understanding of the more complex issues discussed in the course will be provided on the course Moodle website.

### Tutorial

This course does not have a formal tutorial component. However, Group Assignments, GAs, (2 per term) will require groups of students to work together on assignments.

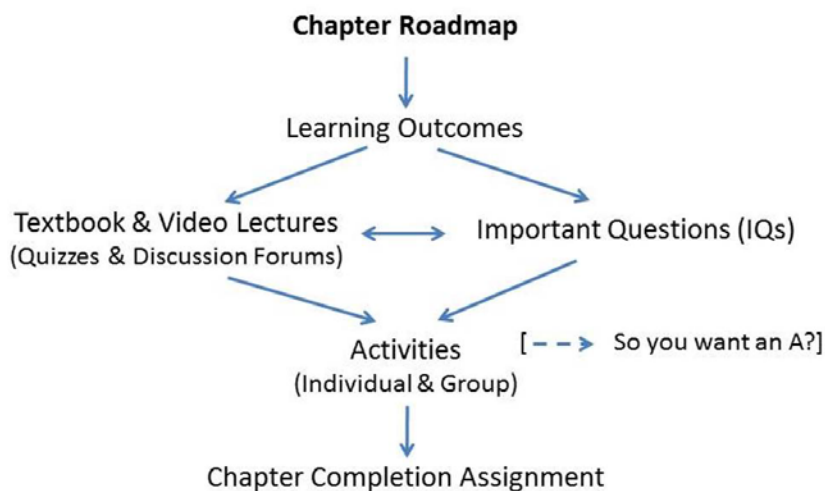
Students will be organized into groups, normally comprised of six students per group. The composition of a Group will be based upon a brief survey administered via Moodle at the beginning of the Fall term. Announcements regarding the timing of this process will be made shortly after the term commences.

On-line group-work will count towards 12.5% of each student’s final grade. Moodle allows communication between and among group members. However, Groups are free to decide the most convenient method/format for communication and interactions. There is no necessity to meet in person to complete these assignments.

### Course Content and Format

- Students who are registered in the course should automatically have access to the class (Moodle) website following Passport York authentication ([moodle.yorku.ca](http://moodle.yorku.ca)). The website will contain all important administrative and curricular information for this course and should be consulted frequently by the student; daily if possible.
- The curriculum consists of 13 chapters from the textbook *Life in the Universe* (4<sup>th</sup> edition) which will be covered over a time-span of 24 weeks. Thus, students can expect to cover approximately one chapter every 10-14 days. A reasonable approach to the materials provided for each Chapter is illustrated below.
- Each of the 13 Chapters of the course has its own Moodle section and follows a welcome and introductory section. Each Chapter section is structured similarly (see diagram below);
  - A list of Learning Outcomes for the Chapter
  - The “Important Questions” that will be discussed in the Chapter
  - The Lecture and associated Questions (ICQs) for the Chapter
  - The specific Activities that should be completed (e.g. individual and/or group assignments, IAs or GAs) for marks for the Chapter
  - “So you want an A” provides resources that help clarify some of the most important concepts in each Chapter, and material that will enrich the student learning experience. None of this material counts toward the final grade.
  - The Chapter Completion Assignment (CCA), a predominantly multiple-choice assignment for marks

- Students are encouraged to consider the Learning Objectives for each Chapter before (re)viewing the Lecture videos. At various points during each video, students are encouraged to pause the video and take an on-line Quiz on the course website which consists of one or more (usually multiple-choice) questions. Students who answer a question correctly on the first pass will receive 3 marks; students who answer the question correctly on the second attempt will receive 2 marks, while students who attempt the quiz but do not answer correctly on two attempts will receive 1 mark for participation. Further attempts, if needed, to answer the question will result in no marks being awarded.
- A Chapter will be considered “open” for a well-advertised amount of time. While a Chapter is “open,” students may attempt its assessments and activities for marks. Once a Chapter is closed, while all the files remain accessible for study and review purposes, it will no longer be possible to complete an assessment or activity for marks.
- The section, “So you want an ‘A’?” contains enriched material that the most motivated students may wish to review to enhance their comprehension of the curriculum. None of this material is for marks or is essential for doing well in this course... but it might help.



## Math Content

This course does not rely upon mathematical skills beyond those normally found in the Grade 10 curriculum: simple algebra and geometry. There is little emphasis placed upon mathematical manipulation. For example, the end-of-term exams will contain 100 to 120 multiple choice questions of which fewer than 5 will require the use of elementary mathematical concepts discussed in the course. Scientific notation, the use of power of 10 notation, is discussed as numbers in this course are both extremely large (scale of the universe) and very small (size of a cell) and warrant an appreciation of how to read such numbers.

## Course Policies

### **Assignment Submission:**

Students must not only perform academically to the best of their ability, but submit their work on time. Accordingly, assignments for this course must be received on or before the due date and time specified. Assignments done on-line such as Quizzes and Chapter Completion Assignments will be automatically graded by Moodle and the grade will appear in the gradebook in a timely manner once the assignment or quiz has closed. Assignments that require a written component – individual and group – must be uploaded to the course website in either **PDF or WORD format** while the assignment is “open.” Please

note that **ONLY** these two formats will be graded.

### **Lateness Penalty:**

Because assignments are handled entirely on-line with a precise due date and time, there will be **no opportunity for late submission**. Thus plan accordingly and do not leave submissions to the last minute.

- ❖ The “80% rule” is in effect for some of the homework, e.g., quizzes (ICQs) and chapter completion assignments (CCAs), so it is **not necessary to provide documentation for a single missing assessment** even if there were valid extenuating circumstances. If, however, there is a chronic problem that may cause a student to miss a few assessments (quizzes or assignments), this should be discussed with an Instructor during office hours at the earliest opportunity.
- ❖ In the case of the Group and Individual Assignments, deadlines are set many weeks in advance to allow adequate time for completion and submission. Do not leave submission to the last minute! All GA and IA’s will count towards your assessment but as noted above the poorest of each assignment type will be weighted at half the value of the other assignments.

### **Missed Tests:**

Students with a legitimate reason for missing a course end-of-term exam, such as illness, compassionate grounds, etc., which is confirmed by supporting documentation (e.g., an Attending Physician’s Statement and not simply a physician’s letter) may request accommodation from a Course Instructor. Flying home early is not considered a legitimate reason for missing an exam. A student who has missed an exam for a legitimate/documentable reason **must** contact the course Instructor by email ([nats1880@yorku.ca](mailto:nats1880@yorku.ca)) as soon as he/she is able, and estimate when she/he will provide the appropriate hardcopy documentation. The hardcopy documentation should be scanned and emailed to the course email address within 5 business days of the missed exam. If the documentation is on time and deemed acceptable by the course director, the student may be given permission to write a deferred Exam. (A hardcopy of the original documentation should be submitted when the deferred exam is written.) If a student misses a deferred Exam, then the student may be required to submit a formal Petition to the Faculty of Science. **It should be realized by all students that missing an end-of-term exam can result in a mark of 0 being awarded for the exam.**

### **Plagiarism:**

Any material submitted by a student for any graded component of this course must be original to that student unless otherwise explicitly acknowledged. Collaboration with colleagues on sharpening critical skills is strongly encouraged in this class, but it is both unethical and unacceptable to claim credit for work performed by another without attribution. Cheating and plagiarism – the attempt to gain unfair academic advantage – will not be tolerated at this institution. This includes allowing another student to submit original work – whole or in part – that you yourself have done. Penalties for all such offences range from a failing grade on the submitted material to expulsion from the University.

### **Paraphrasing:**

To avoid plagiarism, it is common for authors to paraphrase the idea(s) of another; that is, to express in their own words the words of someone else. While this is a legitimate form of expression, the author should still attribute the original source of the idea(s). Moreover, paraphrasing involves a substantial rephrasing of the original author’s words, and not merely to changing a word or phrase.

### **Citation:**

Citations are part of scholarly work. It is important to adopt a consistent citation style (i.e., footnotes, bibliographies, etc.). There are many such styles some of which can be found at: <http://researchguides.library.yorku.ca/styleguides> . We expect students to use the APA style in this course which is described in detail at links on this URL.

The class (Moodle) website is a proprietary repository of materials produced explicitly for the use of students registered in this class. Moreover, the (digital) material on the class website is the intellectual property of the instructors and much of it is under copyright by the textbook vendor. This means that it is unethical and illegal to share this material directly with students not registered in this class or to external websites.

## University Policies

### Important Sessional Dates

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

Event	Date
Classes begin	Sep 7, 2017
Last day to enrol without permission of Course Director*	Sep 20, 2017
Co-curricular week (no classes)	Oct 26 – 29, 2017
Last day of Fall Term	Dec 4, 2017
Examination period (Fall)	Between Dec 6-21, 2017
Last day to drop without a grade submitted	Feb 9, 2018
Reading Week	Feb 17-23, 2018
Last day of Winter Term	Apr 06, 2018
Course Withdrawal Period (withdraw from a course and receive a “W” on the transcript)	Between Feb 10 and Apr 6, 2018
Examination period (Winter)	Between Apr 09-23, 2018

\* No permission to enter the course will be given after this date

For more information or other dates of interest, 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](http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/), 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.

### **Student Conduct in Academic Situations**

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect and to refrain from actions disruptive to such a relationship. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. A statement of the policy and procedures regarding disruptive and/or harassing behaviour by students in academic situations is available on the website of the University Secretariat (<http://secretariat.info.yorku.ca/>).

## **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

### **York University Astronomical Observatory**

This facility offers free public viewing opportunities to the community on Wednesday evenings (in person) and Mondays (online). Group tours by arrangement are also possible. For more information feel free to visit <http://observatory.info.yorku.ca>