

Division of Natural Science

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

Course Outline

NATS 1740 6.0 C, Astronomy
FW 2017-18
MWF 10:30 – 11:30 AM LAS C

Course Instructor(s) and Contact Information

Course: SC/NATS 1740 6.0 – Astronomy
Course Webpage: <https://moodle.yorku.ca/moodle/course/view.php?id=102833>
Term: FW 2017-18

Course Credit Exclusions: SC/NATS 1880 6.00, SC/NATS 1570 3.00. NCR Note: No credit will be retained if this course is taken after the successful completion of SC/PHYS 1070 3.00. Not open to any students enrolled in the Astronomy stream
Prerequisite / Co-requisite: N/A

Course Instructors

First Term (Fall): (Professor) Michael De Robertis Ext. 77761 Petrie Science & Engineering Bldg. 326 nats1740@yorku.ca Office Hours: Wednesdays, 1:30 – 2:30 pm	Second Term (Winter): (Professor) Paul Delaney Ext. 77763 Petrie Science & Engineering Bldg. 329 nats1740@yorku.ca Office Hours: Mondays, 11:30 am – 12:30 pm
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Time and Location

In addition to the in-class opportunities to ask questions, including *after* lectures, 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 Online 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 the details of which are given below.

Contacts and Communications

- A student’s success in any course depends critically on their level of engagement, which requires clear and consistent communications with the relevant 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; e.g., assignment deadlines.
- The *first level* of communications in this course outside of the lecture time 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: nats1740@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 be sent 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 with the class as a whole. Questions raised on email that already have been answered on the Discussion Forum will not receive a response.

- Regular Course Announcements from the course instructors will keep you informed on important dates, administrative aspects of the course and the occasional media-oriented story relevant to the course.
- Students who require face-to-face meetings with the Instructor should make use of the Instructors’ Office Hours or book a personal appointment via nats1740@yorku.ca.
- All members of the course – students, TAs and instructors – should adhere to “common sense” NETiquette guidelines to communicate effectively and courteously online, including:
 - The use of a reasonable ID; e.g., “D. Lee” and not “Joker47”
 - A specific and relevant subject line
 - The use of appropriate language, avoiding rudeness, vulgarity and sarcasm
 - Being concise

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.

NATS 1740, Astronomy, acquaints students with the most interesting topics in astronomy, from the historical development of ideas about our universe through to the modern-day search for exoplanets and the origins of our universe itself. Some fundamental concepts in physics are discussed at an appropriate level to allow a deeper understanding of the world; for example, how planetary systems form, how stars evolve and how the large assemblies of stars in galaxies are maintained. Finally the expanding universe and the Big Bang theory are explored, along with a discussion of dark matter and dark energy. If time permits, a discussion on the possibilities of life beyond Earth (the science of astrobiology) will occur.

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 differences between the ancient and modern models of the structure of the universe and appreciate why the modern model has more predictive power.
3. Describe the significant events that have occurred in the history of the universe, including the Big Bang, the formation of the Solar System and the development of life on Earth.
4. Discuss the nature and characteristics of the principle elements of the universe, namely planets, stars and galaxies.
5. Demonstrate critical thinking and reasoning in developing ideas and in assessing reference sources, as well as to criticize constructively.

Evaluation

Grading Information (1740)

The final grade for NATS 1740 6.0 will be based on the following items weighted as indicated:

Assessment tasks	Details	Weighting (%)
Group Assignments (GAs) ¹	Total of 8: 4 per term	12.5
Individual Assignments (IAs) ²	Total of 4: 2 per term	10.0
In-Class Questions (ICQs) ³	During each class, a few questions must be answered using a smart device	10.0
Unit Completion Assignments (UCAs) ⁴	After each Unit (consisting of one or more chapters), a series of multiple choice questions must be answered on the Moodle website	10.0
Observing Project	An observational assignment to encourage familiarity with the night sky	7.5
End-of-term Examination (Fall) ⁵ (Scheduled by the Registrar)	December: Chapters 1-10, ~120 multiple choice; on campus	25.0
End-of-term Examination (Winter) ⁵ (Scheduled by the Registrar)	April: Chapters 11-19, ~120 multiple choice; on campus	25.0
Total		100.0

¹The Group Assignments (GAs) will require each group of students to complete collaboratively an assignment in class on *selected* Fridays. The aim of each of the 8 assignments will be to further enhance the understanding of certain key topics in the course. The total weight of all 8 assignments is 12.5%. The GAs are subject to the “80% Rule.” This means that only the best 80% of these assessments (6 of the 8) will count towards the overall grade. This allows students to miss up to 2 GAs (e.g., due to illness, forgot to submit, etc.) in the year without suffering negative consequences and without having to supply formal documentation. No make-up options for missing any GA will be available.

²The Individual Assignments (IAs) will require each student to research a topic and report their findings in their own words in their submission. There will be a total of 4 IAs offered (2 per term). To assist in the preparation of the final submission, a “draft” submission normally will be assessed by 2 anonymous student peers to provide feedback on the content, format, clarity and overall composition prior to the final submission date. Adequate time will be provided between the “draft” submission responses and the final submission date. The aim of each of the assignments will be to further enhance the understanding of certain key topics in the course. Only the best 3 of the 4 IAs (in essence, the 80% rule) will count towards the overall grade which has a total weight of 10.0%. No make-up options for missing any IA will be available.

³During lectures, a series of multiple choice questions will be posed by the lecturer and answered by the student using an app on a smart device (about which more information will be provided elsewhere). This will provide real-time feedback on students’ understanding of key concepts. The total weight of the ICQs is 10.0%. The ICQs are subject to the “80% Rule.” This means that only the best 80% of the questions posed will count towards the overall grade. This allows students to miss up to 20% of the ICQs (e.g., due to illness, forgot to submit, late to class, etc.) without suffering negative consequences and without having to supply formal documentation. No make-up options for missing any ICQs will be available.

⁴Unit Completion Assignments (UCAs), held on Moodle at the end of each unit, are all subject to the “80% Rule.” This means that only the best 80% of each of these multiple-choice assessments will count towards the overall grade. This allows students to miss one or possibly more Assignments (e.g., due to illness, forgot to submit, etc.) without suffering negative consequences and without having to supply formal documentation. No make-up options for missing any UCA will be available.

⁵Two End-of-term exams will be predominantly multiple-choice format using Scantron answer sheets and their 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 every student, individual grades are not negotiable and there will be no “extra credit” assignments, period. 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 (normally via Moodle).

Course Materials

The course lectures will closely follow the textbook, “The Essential Cosmic Perspectives” by Bennett *et al.* (8th edition) which is available in hard-copy or electronic format (available at the York University Bookstore or on-line) 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. (MA, while helpful, is not a required resource.) 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.

Tutorials/Labs

This course does not have a lab component or tutorial sessions as in previous years. It does, however, include a Group Assignment component that will take place during lecture time on specified Fridays each term. These Group Assignments, GAs, (4 per term) will involve 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.

The GAs will count towards 12.5% of each student’s final grade.

Observing Project

In one of the fall or winter terms, each student will be required to complete an observing project consisting of acquiring an image of a constellation using a digital camera and providing relevant supporting documentation for both the image and the constellation itself that will be uploaded as a PDF to the course website. The constellation will be selected based on the student’s York University number and will be accessible during the relevant term.

The Project will count towards 7.5% of each student’s final grade.

Course Content and Format

- Students who are registered in the course should have automatic access to the class (Moodle) website following Passport York authentication (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 19 Chapters from the textbook which are bundled into 6 Parts in the text. *The Essential Cosmic Perspective* will be covered over a time-span of 24 weeks. Thus, students can expect to cover, on average, one chapter every week or so. (Chapters are not of equal length.) Of importance when it comes to assignments, is the division of material into **Units**, groups of Chapters that will be tested together: 4 Units will be covered each term. At the conclusion of each Unit there will be a Unit Completion Assignment. A supplementary video on the course

Moodle website will illustrate how you might reasonably approach the materials provided for each Chapter and Unit on the website.

- Each of the 8 Units in the course is structured similarly:
 - A list of Learning Outcomes for the Chapters
 - The “Important Questions” that will be discussed in the Chapters
 - Any additional articles or cool links to assist in the understanding of material
 - “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
 - The Unit Completion Assignment (UCA), a predominantly multiple-choice assignment for marks. It will be held at the conclusion of each Unit.

- A Unit will be considered “open” for a well-advertised amount of time (nominally until the Unit material is completed in the lectures). While a Unit is “open,” students may attempt its quizzes and activities for marks. Once a Unit is closed, while all the files remain accessible for study and review purposes, it will no longer be possible to complete a quiz or activity for marks.

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 about 5 will require the use of 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 the atom) 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 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 accepted for grading.

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., GAs, IAs, ICQs and 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 quizzes or assignments, this should be discussed with an Instructor during office hours or at an arranged meeting at the earliest opportunity.
- ❖ In the case of the Individual Assignments, deadlines are set many weeks in advance to allow adequate time for submission. Do not leave any submission to the last minute!

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 accessible from the course website 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 (nats1740@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. In the case of a missed exam with acceptable, on-time documentation, the student may be given permission to write a deferred Exam. (The original hardcopy documentation should be handed in at the beginning of the deferred exam.) If a student misses a deferred Exam, then the student may be required to submit a formal Petition to the Faculty of Science. **Missing an exam is a serious matter: missing an end-of-term exam can result in a mark of 0 being awarded.**

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 – in 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 the substitution of 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.

Copyright and Intellectual Property

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 07, 2017

Last day to enrol without permission of Course Director*	Sep 20, 2017
Last day to enrol with permission of Course Director	Oct 18, 2017
Fall Reading Days (no lectures)	Oct 26 – 29, 2017
Last day of Fall Term	Dec 04, 2017
Examination period (Fall)	Between Dec 06-21, 2017
Last day to drop without a grade submitted	Feb 09, 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 06 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, 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 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