 PHY 313 / CEI 544 MYSTERY OF MATTER  
Spring 2019

    This is the home page for the PHY313 and CEI544 courses entitled "Mystery of Matter" for the Spring 2019 semester. The course is intended to introduce and explain at a qualitative level the progress physics has made during the past century in understanding the way the universe works and what the current issues are at the frontier of this endeavor. We shall understand at a conceptual level what the facts are and how we learned them. While we will use very little of mathematical tools or derivations we should understand the important concepts at a rigorous, i.e. factual level.   
  
**Instructor:**Prof. Dmitri Tsybychev, e-mail: Dmitri.Tsybychev at stonybrook.edu  
  
**Course Times:** Tuesday, Thursday, 1:00 PM - 2:20 PM  
  
**Room:**CHEMISTRY 128  
  
**Office hours:** TBA, Physics D-135  
  
**Prerequisites:**U3 or U4 standing for non-physics majors; one D.E.C. E or SNW course. All Physics/Astronomy majors need permission of department to enroll, please consult the Director of UG Studies.  
  
**Textbook: Recomended**    
"From Quarks to the Cosmos", L. Lederman and D. Schramm;     
"Facts and Mysteries in Elementary Particle Physics", M. Veltman;     
  
**Outline of the course:**  
    Measurements and Uncertainties  
    Special Relativity  
    Quantum Mechanics  
    Standard Model of Particle Physics  
    Neutrinos and their Masses  
    Antimatter  
    Modern Experiments to Study Nature  
    Stars and How They Work  
    Big Bang and the Early Universe  
    Dark Matter and Dark Energy  
    Gravitational Waves and their Detection  
  
**Homework:**   
    There will be roughly one homework per week assigned on Tuesday and due Tuesday next week at the beginning of class or earlier. You encouraged to work together, although everyone is required to submit their own version of .  Your success in this course is directly proportional to the amount of time you spend on solving the homework problems outside of class, be it on your own or with a group of other students.  
  
**Homework Assignments:**

|  |  |  |
| --- | --- | --- |
| HW# | Reading | Problems |
| 1 |  |  |

**Exams:**   
    There will be one midterm and the final exam. Exams are closed book, but hand written notes are allowed.  
  
***Midterm Exam: TBA  
  
Final Exam:     TBA& TBA***  
  
**Attendance:**   
    Attendance in class is expected. You are responsible for all material covered in class. All of this material is relevant for any quiz or examination, unless otherwise stated.  
  
**Course Grade:**   
    Homework 40%, Midterm  30% and Final 30% of the final grade.

ELECTRONIC COMMUNICATION

    Email to your University email account is an important way of communicating with you for this course. For most students the email address is ‘firstname.lastname@stonybrook.edu’, and the account can be accessed here: <http://www.stonybrook.edu/mycloud>.  It is your responsibility to read your email received at this account. For instructions about how to verify your University email address see this: <http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>.  You can set up email forwarding using instructions here: http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail. If you choose to forward your University email to another account, you are responsible for any undeliverable messages.

RELIGIOUS OBSERVANCES

    See the policy statement regarding religious holidays at <http://www.stonybrook.edu/registrar/forms/RelHolPol%20081612%20cr.pdf> Students are expected to notify the course professors by email of their intention to take time out for religious observance.  This should be done as soon as possible but definitely before the end of the ‘add/drop’ period.  At that time they can discuss with the instructor how they will be able to make up the work covered.

DSS STATEMENT:  
    If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services (631) 632-6748 or <http://studentaffairs.stonybrook.edu/dss/>. They will determine with you what accommodations are necessary and appropriate.  All information and documentation is confidential. Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services.  For procedures and information go to the following website: <http://www.stonybrook.edu/ehs/fire/disabilities.shtml>  
  
ACADEMIC INTEGRITY STATEMENT:  
    Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's   work as your own is always wrong. Faculty members are required to report any suspected instance of academic dishonesty to the Academic Judiciary.  For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at:  
<http://www.stonybrook.edu/uaa/academicjudiciary/>  
  
CRITICAL INCIDENT MANAGEMENT:  
Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn. <http://www.stonybrook.edu/uaa/academicjudiciary/>