Math 537 - Fall 2022
Course Syllabus

Lecturer: **Dror Varolin**

Office	4-111 Math Tower
Office Hrs	Mon 12:00pm-1:30pm, Thu 12pm-1:30pm or by appointment
EMAIL	dror@math.stonybrook.edu
Phone	631-632-8273

Prerequisites: Introductory graduate courses in real and complex analysis, or permission from both the instructor and the Stony Brook Mathematics Graduate Director, Mark McLean, whom you can email at mark.mclean@stonybrook.edu.

Text: This semester we will follow the book of Jena-Pierre Demailly. These can be downloaded at the following link:

https://www-fourier.ujf-grenoble.fr/~demailly/manuscripts/agbook.pdf

The notes will sometimes be supplemented by notes of the instructor.

Course webpage: http://www.math.stonybrook.edu/~dror/537-f24.html

Holidays: Holidays are listed in the university calendar. See
http://www.stonybrook.edu/registrar/index.shtml

Homework: The course has no homework.

Examinations: There will be no exams.
Math Learning Center (MLC): The location of the MLC is S-235 in the math tower. The MLC is open every day and most evenings. A schedule is posted on the door.

Drop/Add dates: Can be found **here**

For more details, click the following link to the SBU registrar

The following is the course syllabus:

0. Students are responsible for the material in I.1

1. Complex Differential Calculus and Pseudoconvexity

   a. Currents on Differentiable Manifolds
   b. Holomorphic Functions and Complex Manifolds
   c. Subharmonic and Plurisubharmonic Functions
   d. Domains of Holomorphy and Stein manifolds

2. Holomorphic Vector Bundles and Hörmander's Theorem

   a. Connections and Curvature
   b. The Bochner-Kodaira Identity
   c. Hörmander's Theorem
   d. Application to the Geometry of Projective Manifolds
   e. Grauert's Solution of the Levi Problem

3. Coherent Sheaves and Analytic Spaces

   a. Presheaves and Sheaves
   b. The Local Ring of Germs of Analytic Functions
   c. Coherent Sheaves
   d. Complex Analytic Sets
   e. Complex Spaces
   f. Analytic Cycles and Meromorphic Functions
   g. Normal Spaces and Normalization
   h. Holomorphic Mappings and Extension Theorems
   i. Complex Analytic Schemes
   j. Bimeromorphic Maps, Modifications and Blow-ups

4. Pluripotential Theory

   (a) Basic Concepts of Positivity
   (b) Closed Positive Currents
   (c) Monge-Ampère Operators
   (d) Generalized Lelong Numbers

Student Accessibility Support Center Statement

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

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 is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website
http://www.stonybrook.edu/commcms/academic_integrity/index.html

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 Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the latest COVID guidance is explicitly amended by SBU, during Fall 2021"disruptive behavior" will include refusal to wear a mask during classes.