HOLOMORPHIC MAPPINGS IN SEVERAL COMPLEX VARIABLES

JOHN P. D'ANGELO

MATH 595: Spring Semester, 2016. Class meets MWF 9 AM in 341 Altgeld.

Course description: This course will begin with the basic theory of complex analysis in several variables. We will discuss some of the similarities and differences between complex analysis in one and higher dimensions. After proving some of the main facts about the Cauchy-Riemann equations and pseudoconvex domains, we will turn to holomorphic mappings and CR Geometry. I hope to spend considerable time on accessible results in the research literature, especially about CR mappings between spheres in different dimensions. This topic will allow us to see connections with harmonic analysis, representation theory, algebraic combinatorics, and other parts of mathematics.

There will be no exams; each student will be asked to lecture once on advanced material, mutually agreed upon by the professor and the student.

Course website address: `http://www.math.uiuc.edu/~jpda/teaching.html`

Text: There is no required text book. I recommend "Function Theory of Several Complex Variables", by Steven G. Krantz.

There are three editions of this book. Since we will not follow the book precisely, it doesn't matter which one is used. The newest and previous are:

Reprint of the 1992 edition. AMS Chelsea Publishing, Providence, RI, 2001.

Second edition. The Wadsworth and Brooks/Cole Mathematics Series. Wadsworth and Brooks/Cole Advanced Books and Software, Pacific Grove, CA, 1992.

Other books: Some of the course material appears (only) in my book:

John P. D'Angelo, Several complex variables and the geometry of real hypersurfaces. Studies in Advanced Mathematics. CRC Press, Boca Raton, FL, 1993.

The best text in the subject remains:

Lars Hörmander, An introduction to complex analysis in several variables. Third edition. North-Holland Mathematical Library, North-Holland Publishing Co., Amsterdam, 1990.

Prerequisites: Graduate level courses in one complex variable and real analysis (Math 542 and Math 540), Graduate level course in differential manifolds such as Math 518. A course such as Math 553 is useful but not strictly a prerequisite.

355 Altgeld Hall, Dept. of Mathematics, Univ. of Illinois, 1409 W. Green St., Urbana IL 61801

E-mail address: `jpda@math.uiuc.edu`