

VILLANOVA UNIVERSITY
Physics Department

PHYSICS 4200
MATHEMATICAL PHYSICS I

SPRING 2013
M. BESSON

Textbook: *Mathematical Methods in the Physical Sciences*, 3rd ed., by Mary L. Boas.

Reference Text: *Math Refresher for Scientists and Engineers*, 3rd ed., by John R. Fanchi.

Exams: There will be a midterm worth 100 points, and a final exam worth 200 points.

Assignments will be made periodically. These will be collected, graded and returned. The total number of points on all the assignments will be worth the equivalent of one exam (100 points).

Grades: The passing grade for the course is 55%.

Topics:

- Vector fields
- Rotation of coordinates
- Differential vector operators
- Coordinate systems
- Matrices, determinants, and linear equations
- Eigenvalues and eigenvectors
- Infinite series
- Fourier series
- Fourier and Laplace transforms