Ewha Graduate School
Course Syllabus
2015 Spring Semester

Course Title: Scientific Computing   Course ID: G10523

Class Hour: Thur2/3(9:30-)   Class Room: SciComplx A-315

Instructor: June-Yub Lee   http://math.ewha.ac.kr/~jylee

Office: SciComplx A-324(3277-3451)   Office Hour: 수 1:30~2:30

1. Objective

We try to develop computational models for various problems in mathematics, sciences, and engineering. We study numerical methods and programming tools to get the computational results of such problems.

2. References

Walter Gander, Jiri Hrebicek, **Solving Problems in Scientific Compututing using Maple and Matlab**, 2nd Ed, Springer. (4th/2004)

Ke Chen, Peter Giblin, Alan Irving, **Mathematical explorations with Matlab,** Cambridge University Press, 1999.

Richard E. Crandall, **Projects in scientific computation**, Springer-Verlag, The Electronic Library of Science(TELOS), New York, 1994

Stenen Koonin, **Computational Physics**, The Benjamin/Cummings Pub.

3. Assignment and evaluation

- **Homework** : Programming in any language (Matlab, Fortran, C/C++)
- **Computational Project** : A report with program and documentation
- **Final Project** : Individual (or team) project of your own choice

4. Weekly Schedule

Week	Chapter	Subject	Text	
1-2	1. The Tractrix and Similar Curves	Ordinary differential equation	1-14	
3-5	3. The Illumination Problem	Numerical differentiation and optimization	25-36	
6-7	5. The Internal Field in Semiconductors	2nd order elliptic partial differential equation	59-68	
9-11	6. Some Least Squares Problems	Least square method	69-87	
12-13	9. Smoothing Filters	Denoising signals	121-140	
14-15	Final Presentation	Individual Projects		