MthSc 816: *Network Algorithms and Data Structures* (Spring 2011)

Instructor:	Douglas R. Shier, O-120 Martin, x1100, shierd@clemson.edu
Office Hours:	M 11:00–12:30, W 1:00–2:30
Class:	2:00–3:15 TuTh, Martin E-5
Web Page:	http://www.ces.clemson.edu/~shierd/Shier/MthSc816/ms816.html
Text:	*Data Structures and Network Algorithms*, R.E. Tarjan (required)
	Notes on Graph Algorithms, J.P. Jarvis & D.R. Shier (available from Campus Copy Shop, Rubin Square)
References:	Ahuja, Magnanti, Orlin: *Network Flows*
	Chachra, Ghare, Moore: *Applications of Graph Theory Algorithms*
	Evans & Minieka: *Optimization Algorithms for Networks and Graphs*
	Even: *Graph Algorithms*
	Gondron & Minoux: *Graphs and Algorithms*
	Goodman & Hedetniemi: *Design and Analysis of Algorithms*
	Syslo, Deo, Kowalik: *Discrete Optimization Algorithms*
Grading:	The course grade is based entirely on 5-6 projects, which involve designing, implementing, and analyzing algorithms. Clear and careful reports of your approach, data structures and algorithm complexity are an important part of the project assessment. You can use MATLAB, MAPLE, FORTRAN, Pascal, C, or C^{++} as your programming language. For other languages, please talk to the instructor.

Topics:
- Introduction: notation, terminology, complexity, networks
- Basic data structures: linked lists, predecessor, successor, depth, thread, network representations
- Basic algorithms: search trees, traversals, paths, cutsets, updating data structures
- Network algorithms: minimum spanning tree, shortest path, max flow, weighted matching (includes data structures such as heaps, binary search trees, leftist trees)
- Computational complexity: theoretical and empirical

Official Policies:

• It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.

• Clemson's academic integrity policies will be followed; see the following web sites

    http://www.clemson.edu/ugs/academic_integrity/index.html
    http://gradspace.editme.com/AcademicGrievancePolicyandProcedures - integritypolicy