Integer Programming and Combinatorial Optimization

Ph.D. program in Computational Mathematics and Decision Science

Instructor:	**Austin Buchanan**	**When:**	23-05/15-06, 2022, 10h00-13h00
Email:	buchanan@okstate.edu	**Place:**	UniPv, Mathematics Dept.
		Room:	Laboratorio Informatico

Course Description: Theory, algorithms, and applications of discrete optimization. Binary, pure, and mixed-integer linear optimization formulations, relaxations; preprocessing, branch and bound, formulation strength, polynomial equivalence of separation and optimization; theory of polyhedra, convex hulls and facets, valid inequalities for pure and mixed-integer problems, lifting, perfect formulations, extended formulations.

Class Policy:

- Regular attendance is essential and expected.

Main References:

- Conforti, Cornuejols, and Zambelli, ´ Integer Programming, Springer, 2014. (A modern take on IP)
- Free PDF here: http://link.springer.com/book/10.1007%2F978-3-319-11008-0
- Jeff Linderoth's slides: http://homepages.cae.wisc.edu/~linderot/classes/ie418/index.html
- Wolsey, Integer Programming, Wiley, 1998. (Accessible)
- Nemhauser and Wolsey, Integer and Combinatorial Optimization, Wiley, 1999. (Comprehensive)
- Schrijver, Theory of Linear and Integer Programming, Wiley, 1998. (Highly mathematical)

Virtual Attendance: The course will be transmitted for registered students via Zoom at:

- https://us02web.zoom.us/j/88586791751?pwd=bGs3a2x2UlAyUE5zYS94R2ErbUsyZz09
- Meeting ID: 885 8679 1751 - Passcode: 946275

Announcements: I will post many things on the course website, including homeworks, class notes, project descriptions, and links to interesting websites. Please check your e-mail address daily.

Academic Honesty: Lack of knowledge of the academic honesty policy is not a reasonable explanation for a violation.