

Weeks 1 and 2 deal with Linear Programming in Sections 7.1 – 7.3. Weeks 3 – 6 deal with Matrix Algebra in Sections 6.1 – 6.6, plus extra notes on Determinants. We omit section 6.7. Weeks 7 – 12 deal with the Calculus of Functions of Several Variables in Sections 2.8, 17.1 – 17.7, and 17.9, plus extra notes on the Hessian matrix for optimization. We omit section 17.8. Our lecture plan is to follow the schedule below. Some times we may be slightly ahead or behind a topic for a given date.

1. **Week 1 (Jan 5 - 11)** Introduction to MATA33: course policies and overview. Section 7.1 – 7.2: Linear inequalities in 2 variables; linear programming terminology and method. (No tutorials, No Quiz)
2. **Week 2 (Jan 12 - 18)** Sections 7.2 and 7.3: Linear programming terminology and method, multiple optimal solutions, applications. (Tutorial 1, No Quiz)
3. **Week 3 (Jan 19 - 25)** Sections 6.1 – 6.3: Matrices, basic matrix operations, terminology, systems of equations, applications. (Tutorial 2, Quiz 1)
4. **Week 4 (Jan 26 - Feb 1)** Sections 6.4 and 6.5: Solving systems of equations by matrix reduction, row operations, parameterized solutions, applications. (Tutorial 3, No Quiz)
5. **Week 5 (Feb 2 - 8)** Section 6.6: Matrix inverse, inverse calculations, solving systems of equations using matrix inverse. (Tutorial 4, Quiz 2)
6. **Week 6 (Feb 9 - 15)** Determinants (lecture notes only, no text material): determinant of  $2 \times 2$ ,  $3 \times 3$ , and general square matrices via co-factor expansion, Cramer's rule, general properties, row operations and determinant, applications. (Tutorial 5, No Quiz)
7. **Week 7 (Feb 16 - Mar 1)** Section 2.8 and 17.1: Introduction to functions of several variables, level curves, applications, partial derivatives. (Tutorial 6, Quiz 3)

**Family Day/Reading Week is Monday Feb 19 - Friday Feb 23** No lectures or tutorials occur during this week.

8. **Week 8 (Mar 2 - 8)** Sections 17.1 – 17.3: Partial Derivatives, Applications of partial derivatives, implicit partial differentiation. (Tutorial 7, No Quiz)
9. **Week 9 (Mar 9 - 15)** Section 17.4 and 17.5: Higher-order partial differentiation, chain rule for partial derivatives. (Tutorial 8, Quiz 4)
10. **Week 10 (Mar 16 - 22)** Section 17.6: Extrema for functions of two variables, terminology and overview, second derivative test, extra notes on the Hessian matrix for optimization, applications. (Tutorial 9, No Quiz)
11. **Week 11 (Mar 23 - 29)** Section 17.7: Lagrange multipliers: overview, technique for functions of 2 and 3 variables, multiple constraints, applications. (Tutorial 10, Quiz 5)

**Friday March 30 is Good Friday** No lectures or tutorials occur on this day.

12. **Week 12 (April 2 - 6)** Section 17.9: Multiple integration, double and triple integrals, changing order of integration. (Tutorial 11, No Quiz)