**Department of Economics**
12 January 2009
A. Strøm, room 1119, ES

# ECON3120/4120 Mathematics 2, spring 2009

Lecture schedule (Note: Changes may occur)

**Lectures:**
Monday 10:15—12:00, auditorium 7.
Thursday 12:15—14:00, auditorium 7.

**Seminars (problem sessions):**
Monday 14:15—16:00, seminar room 301 in HH. Seminar leader: Nils Chr. Framstad.
Wednesday 10:15—12:00, seminar room 150 in HH. Seminar leader: Nils Chr. Framstad.
Friday 14:15—16:00, seminar room 150 in HH. Seminar leader: Nils Chr. Framstad.
(HH = Harriet Holter's House)

The seminars begin in week 5 (26—30 January).

**Curriculum:**

**EMEA:** K. Sydsæter and P. Hammond: **Essential Mathematics for Economic Analysis, 2nd ed.,** FT Prentice Hall, 2006. The entire book, except Sections 10.5—10.7 and 16.9 and Chapter 17. (You can also use the first edition from 2002: The entire book, except Sections 10.5—10.7 and 16.9.)

**FMEA:** Knut Sydsæter, Peter Hammond, Atle Seierstad, and Arne Strøm**: Further Mathematics for Economic Analysis,** FT Prentice Hall, 2005. Sections 5.1—5.4 and selected parts of Sections 3.5—3.8.

The curriculum listed above includes the curriculum of the mathematics part of the course ECON2200 Mathematics I/Micro I.

The final **exam** is scheduled for 2 June, 14:30—17:30 (but this may be changed).

Lecture plan:

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| Mon 12.1 | Exponential functions and logarithms. (EMEA 4.9—4.10, 6.10—6.11) |
| Thur 15.1 | Exponential and logarithmic functions. Compound interest and present value. (EMEA 6.10—6.11, 10.1—10.3) |
| Mon 19.1 | Limits and continuous functions. The intermediate value theorem. (EMEA 7.8—7.11) |
| Thur 22.1 | Inverse functions. Indefinite expressions. (EMEA 5.3, 5.6, 7.12) |
| Mon 26.1 | Linear and quadratic approximation. Taylor's formula. (EMEA 7.4—7.6) |
| Thur 29.1 | Integration. (EMEA 9.1—9.4) |
| Mon 2.2 | Methods of integration. (EMEA 9.5—9.6) |
| Thur 5.2 | Extensions of the integral concept. (EMEA 9.7) |

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| Mon 9.2 | First-order differential equations. Separable differential equations. (EMEA 9.8, FMEA 5.1—5.3) |
| Thur 12.2 | Linear differential equations. (FMEA 5.4) |
| Mon 16.2 | Vectors. Scalar products. Summation notation. (EMEA 15.7—15.9, 3.1—3.3) |
| Thur 19.2 | Matrices. (EMEA 15.1—15.5) |
| Mon 23.2 | Gaussian elimination. Determinants. (EMEA 15.6, 16.1—16.3) |
| Thur 26.2 | Determinants. (EMEA 16.4—16.5) |
| Mon 2.3 | Inverse matrices. Cramer's rule. (EMEA 16.6—16.8) |
| Thur 5.3 | No lecture |
| Mon 9.3 | The chain rule with several variables. (EMEA I 12.1—12.2) |
| Thur 12.3 | Homogeneous functions. (EMEA 12.6—12.7) |
| Week 12 | ``Reading week''. No lectures or seminars in this course 16.3—20.3. |
| Mon 23.3 | Derivatives of implicit functions. Slope of level curves. Derivatives of inverse functions. (EMEA I 7.1—7.3, 12.3—12.4) |
| Thur 26.3 | Straight lines and planes. Tangent planes. Differentials. (EMEA 15.9, 12.8—12.9) |
| Mon 30.3 | Differentiation in equation systems. (EMEA 12.10—12.11) |
| Thur 2.4 | Maxima and minima. (EMEA 8.1—8.6 (brief review), 13.1—13.6) |
| Easter | No lectures or seminars 6.4—14.4. |
| Thur 16.4 | Constrained maxima and minima. (EMEA 14.1—14.5) |
| Thur 23.4 | Constrained maxima and minima. The envelope theorem. (EMEA 14.5—14.6, 13.7) |
| Thur 30.4 | Nonlinear programming. (EMEA 14.7—14.8, parts of FMEA 3.5—3.8) |
| Thur 7.5 | Elasticities. Finding elasticities of implicit functions. (EMEA 7.7, 11.8, 12.5) |
| Thur 14.5 | Final review and summing up. |

Keep an eye on the **ECON4120** home page!