

# SE Course: Numerical Methods

<http://www.cs.aau.dk/~yang/course/NMbasis/NM2010.htm>  
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## MM7: Spline Interpolation Methods

### 1 kl.8:15-9:00, Review of MM6 and Some Examples

- What we talked in MM6;
- Examples of Horner's rule and Lagrange interpolation method;
- Matlab implementations.

### 2 kl.9:10-10:40, Exercises for MM6

**Question One (Exercise 4.2.1, 4.2.2, pp.83):**

Find the Lagrange interpolation polynomial for the data

$x$	1	2	4
$f(x)$	3	2	1

- Use this to estimate  $f(1.5)$ ;
- Repeat the above exercise with the additional data  $f(0) = 4$ ,  $f(3) = 1$ .

**Question Two (Exercise 4.2.4, 4.2.5, pp.83):**

Consider the following table of values of the cosine function:

$x$	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8
$\cos(x)$	1.000	0.9950	0.9801	0.9553	0.9211	0.8776	0.8253	0.7648	0.6967

- write down the Lagrange interpolation polynomial using the nodes 0.0, 0.1, 0.2 and 0.3;
- Estimate the value of  $\cos(1.4)$  using this polynomial;
- Obtain the error bound for the above approximation.

### 3 kl.10:50-11:30, Introduction to Spline Interpolation Method

- Reading material: Subsection 4.4, 4.5 in Textbook.