<texit info> author=Roman Putanowicz title=Selected topics in computer science backgroundtext=http://www.L5.pk.edu.pl/~putanowr/stcs.html </texit> <texit> \input{/home/prac/putanowr/dokuwiki/data/media/wiki/latex/stcs_preamb.tex} </texit>

Selected topics in Computer Science

Course description

The course presents selected topics in Computer Science from the point of view of scientists and engineers performing numerical simulations. Students learn how the tasks performed during numerical simulations lead to more general problems in computer science and are presented with brief overview on how these problems are solved. Students are developing practical skills in using selected computer tools to perform numerical simulation tasks.

Duration:	1 semester
Number of hours:	15 (lectures) + 15 (laboratories). The labs and lectures are fortnightly (2×45, odd weeks)
Instructors:	dr inż. Roman Putanowicz

Assessment method

Assessment on the basis on term project report. Term projects will be generally related to the computer tools presented during the labs.

On-line resources

All course materials are available on-line from the course web page:

- http://www.l5.pk.edu.pl/~putanowr/stcs.html

The materials on the above page are available also in PDF format: please search for the “Export PDF” link in the toolbox in the left panel.

Lectures

No	Content
1	Numerical simulations work flow. Pre-processing and post-processing tasks. Simulation software overview. PDF slides (440kB)
2	Languages for numerical simulations. PDF slides (330kB)
3	Advanced mathematical environments. Sage problem solving environment. PDF slides (1.1MB)
4	Scientific visualisation in 2D and 3D. PDF slides (2.1MB)
5	Geometric modelling and mesh generation.
6	Scientific data formats. Handling data files in AWK and Python.

No	Content
7	Large sparse systems of linear algebraic equations.
8	Numerical simulations versus physical experiments.

Lab assignments

No	Title
1	Introduction to Linux. Configuration of desktop environment.
2	Usage of compilers and interpreters.
3	Introductory Python programming.
4	Selected mathematical software.
5	Mesh generation.
6	Tools for data visualisation in 2D.
7	Tools for data visualisation in 3D.
8	Project presentations.

Term projects

During the term each student will have to prepare a report on a project that will be assigned to him or her. **The deadline for submitting the reports is 10.01.2011. Submitting the report before the deadline is necessary condition for passing mark for the whole course.**

The report should be prepared as PDF file and send by e-mail to the respective tutor. There are no specific requirements on the document preparation system. One can use

- LaTeX – please see the notes
- Microsoft Office,
- web based solutions (raw HTML or some wikis and then printing),
- other

Important

The students are not allowed to consult the project, neither solution method nor the results with their classmates or other students

Reading list

Primary readings

<BIBTEX: file=stcs_primary_readings style=chicago> <texit> \begin{enumerate} \item dummya

\end{enumerate} </texit>

Additional readings

<BIBTEX: file=stcs_additional_readings style=chicago>

<texit> \begin{enumerate} \item dummya \end{enumerate} </texit>