**Transport phenomena course: course description and schedule**

*The course is given within the program Resource smart processes by Tomas Vikström (Valmet)*

Aim: Transport phenomena, i.e. transport of momentum, heat and mass, is of fundamental importance for research in chemical engineering as well as in applications in design of separation equipment, chemical reactors, heat exchangers, etc.

The aim of this course is to give an in-depth understanding of transport phenomena and how these are applied. Understanding of mathematical modelling is central.

The course will comprise ten half-day seminars given physically at Chalmers and KTH.

Examination: Problem solving and **active participation** in seminars.

 **Final oral examination, with short report on transport phenomen in own research.**

Literature: R.B. Bird, W.E. Stewart och E.N. Lightfoot: Transport Phenomena 2nd ed. Revised, Wiley 2007 and additional texts – Handouts on Turbulence/Numerics.

Schedule, 10 occasions, 2/month

Lecture rooms @ KTH/CTH – physical meetings

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| Seminar 1  | KTH (12/9)  | I : Introduction/Transport by molecular motion |
| Seminar 2 | Chalmers (27/9) | II: Transport in one dimension |
| Seminar 3  | KTH (10/10), Chalmers (11/10)  | III: Transport in arbitrary continua, General transport equation |
| Seminar 4 | KTH (24/10) | IV: Transport with two independent variables (+extra material) |
| Seminar 5  | KTH (7/11), Chalmers (8/11) | V: Transport in turbulent flow |
| Seminar 6  | Chalmers (22/11) | Numerics and Turbulence |
| Seminar 7  | KTH (5/12), Chalmers (6/12) | VI: Transport across phase boundaries |
| Seminar 8 | KTH 19/12  | VII: Transport in large systems |
| Seminar 9 | KTH (23/1), Chalmers (24/1) | VIII: Transport by other mechanisms |
| Seminar 10 | Chalmers (14/2) | Analysis of own research problems (Report ready 7/2) |
| Oral examination | tbd |  |

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