



## READING LIST

### HPE102, Teaching and Learning in Higher Education 2: Subject Field Pedagogy, 5 hec

#### Natural Science

\* Required reading

#### *Learning Outcomes and Course Plans*

\* Kennedy Declan, Hyland Áine, Ryan Norma: “Writing and using learning outcomes: a practical guide”, article C 3.4-1 in Eric Froment, Jürgen Kohler, Lewis Purser and Lesley Wilson (eds.): *EUA Bologna Handbook – Making Bologna Work* (Berlin 2006: Raabe Verlag)  
[http://www.fibaa.org/fileadmin/uploads/content\\_uploads/Writing\\_and\\_Using\\_Learning\\_Outcomes\\_01.pdf](http://www.fibaa.org/fileadmin/uploads/content_uploads/Writing_and_Using_Learning_Outcomes_01.pdf)

\* GU course plan templates (English and Swedish):  
Available on Canvas

Hussey, Trevor & Smith, Patrick (2002). “The trouble with learning outcomes.” *Active learning in Higher Education* 3, 220-233. <http://alh.sagepub.com/content/3/3/220.abstract>

\* What is the Value of Course-Specific Learning Goals? *Journal of College Science Teaching* November/December 2009 p52.  
[http://www.cwsei.ubc.ca/SEI\\_research/files/LifeSci/Simon\\_Taylor\\_ValueOfCourseSpecificLG.pdf](http://www.cwsei.ubc.ca/SEI_research/files/LifeSci/Simon_Taylor_ValueOfCourseSpecificLG.pdf)

\* General Instructional Design Principles Teach Beyond your Reach by R. Neidorf (2006)  
<http://samarnhpang.files.wordpress.com/2011/06/teaching-c.pdf>

#### *Science Education: Why we need a change*

\* Why we are teaching science wrong and how to make it right. Waldrop, *Nature* (2015) 523  
<http://www.nature.com/news/why-we-are-teaching-science-wrong-and-how-to-make-it-right-1.17963>

Innovations in teaching undergraduate biology and why we need them. W. Wood. *Annual Review Cell and Developmental Biology* 2009 25:93.  
<http://www.ncbi.nlm.nih.gov/pubmed/19575638>

A wakeup call for science faculty. *Alberts Cell* 2005 123:739-741.  
[http://www.cell.com/abstract/S0092-8674\(05\)01182-7](http://www.cell.com/abstract/S0092-8674(05)01182-7)

### ***Learning Theory in Science Education***

How People Learn: Bridging Research and Practice (1999) National Research Council, National Academy Press  
[http://www.nap.edu/catalog.php?record\\_id=9457](http://www.nap.edu/catalog.php?record_id=9457)

How People Learn: Brain, Mind, Experience, and School: Expanded Edition (2000) National Research Council, National Academy Press  
[http://www.nap.edu/catalog.php?record\\_id=9853](http://www.nap.edu/catalog.php?record_id=9853)

Improved Learning in a Large Enrollment Physics Class. *Science* (2011) 332:862.  
<http://science.sciencemag.org/content/332/6031/862.long>

AMEE Medical Education Guide, 20. The good teacher is more than a lecturer-the 12 roles of the teacher.  
[http://wikieducator.org/images/e/e3/Twelev\\_Roles\\_of\\_a\\_Lecturer.pdf](http://wikieducator.org/images/e/e3/Twelev_Roles_of_a_Lecturer.pdf)

### ***Classroom Formats***

\* Refreshing your Lecturing, Chapter 3 of *The Lecturer's Toolkit*, Race and Brown 2007.

### ***Concept Tests and Clickers***

Science Simulations: <http://phet.colorado.edu/en/simulations/category/new>

\* Lecture: Confessions of a Converted Lecturer: Eric Mazur  
<https://www.youtube.com/watch?v=WwslBPj8GgI>

### ***Small groups***

Small-Group Instruction: An Annotated Bibliography of Science, Mathematics, Engineering, and Technology Resources in Higher Education  
[http://www.wcer.wisc.edu/archive/nise/publications/Occasional\\_Papers/COOPER/CooperALL.pdf](http://www.wcer.wisc.edu/archive/nise/publications/Occasional_Papers/COOPER/CooperALL.pdf)

### ***Laboratories***

Offering more than 'Here is the textbook': Teaching assistants' perspectives on introductory science courses by S. Dotger *J. College Science Teaching* Jan/Feb 2010, 71-76.

\* Easy ways to promote inquiry in the laboratory course KM Polacek *J. College Science Teaching*, Sept 2005, 52-55.

### ***Assessment***

Developing Assessment Items: a how-to guide. Henriques, et al., 2006. *In* Assessment in Science: practical experiences and education research, chapter 2. National Science Teachers Association

### ***General References***

\* Reaching Students: what research says about effective instruction in undergraduate science and engineering (2015) National Academies Press (selected chapters)

Available online at: <http://www.nap.edu/catalog/18687/reaching-students-what-research-says-about-effective-instruction-in-undergraduate>

The Lecturer's Toolkit, Race and Brown 2007 Available online at gu.se

Biggs, John & Tang, Catherine (2007). *Teaching for quality learning at the university: What the Student Does*. New York, NY: Maidenhead. (I första hand kapitel 4 (Using constructive alignment in outcomes-based teaching and learning) Available through GU library

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