# **26202 - Physical Chemistry for the Biological Sciences**

# Bachelor course 50-60 students

Biotechnology Environmental Engineering Human Life Science Engineering Environmental Engineering Manufacturing Engineering Medical Engineering



The 5th DTU Biennial for Teaching & Learning: Good Teaching Practice in Engineering Education

# Inspiration for e-learning, online training / e-learning platform

- Series of seminars organized by DTU LearningLab. For instance:

   "Seminar on quality in online education", (Sept. 2013)
   Michael K. Petersen, DTU Compute;
   Anders G. Pedersen, DTU Systems Biology;
   Merete Badger, DTU Wind Energy;
   Rasmus Blok, Center for Teaching and Learning, University of Aarhus
- Jan H. Jensen (Cph. Univ.); lecture at DTU Chemistry (Febr. 2014); experience with e-learning and videos supporting his lectures
- Youtube / examples offered by the MIT / University of California

### Help during the process

DTU LearningLab

- Sidsel-Marie W. Prag inspiring and helpful discussion / reorganization of the course
- Bjørn Thorup / Aske H. Fabech video production
- Financial support (DTU) for the development of e-learning / experiments (Febr. 2014) (experimental equipment; teaching assistant)

#### **Development - I**





traditional lectures 2 hours/week

Physical Chemistry understanding

2 experiments 20 % report (exercises exercises 2 hours/week

> home work 20 %

traditional lectures 2 hours/week

Physical Chemistry understanding exercises 2 hours/week

> home work



### **First lecture**

Meeting the students where they are in terms of scientific knowledge and providing the support they need to increase their level of understanding



### Structure



# Feedback

20	2015 – in	Resultater		2014	Charlotte Malassé DTU Che	Resultater		2015	
_•				2014				2015	
"P	roject v	Karakter	Antal		roup discusses theory and pla	Karakter	Antal		
	This i	12	2	(2,9 %)	eases your understanding of a	12	6	(10 %)	ourse"
"В	But you (	10	4	(5,9 %)	your own group's area of thec	10	11	(18,3 %)	to
	subse				other groups' areas of theory"			_	
"O	n the o	7	12	(17,6 %)	t they have become more inde	7	10	(16,7 %)	O
	acqui	4	13	(19,1 %)	king for themselves, and they	4	11	(18,3 %)	e in
	doing			_				-	
" <b> </b> t	think it'ៈ	02	14	(20,6 %)	s your eyes to what the world	02	5	(8,3 %)	In
	under "However which	00	10	(14,7 %)	isms behind physical chemistr thread in the course and an c	00	3	(5 %)	
"Н		-3	11	(16,2 %)		-3	9	(15 %)	
		Ej mødt	2	l (2,9 %)		Syg	2	(3,3 %)	

30%

(5 %)

3

Ej mødt

# Feedback

#### 2016

- He is very good at explaining when you do not understand the subject.
- Continue the good work.
- I would like to have more permanent lectures, as one can easily lose focus on group presentations
- ....I miss a more detailed review of how we can use the formulas.
- ... more structured lectures.
- I think you do a good job as a teacher, and it has been a good course.
- I would have liked that there were a few more lectures on your part before the group. Otherwise, I think it's fine that you're trying to mix the teaching methods.
- The two quizzes during the course, I also think is a good thing.
- Quizzes were more difficult than the assignments preparing for the quiz.