

TUD Master Course (Molecular Bioengineering):

Cellular Machines I (SS 2011)

(2 SWS Lecture, 2 SWS Seminar, 2 SWS Practical)

TUD Master Course (Nanobiophysics):

Biological Nanomachines (SS 2011)

(2 SWS Lecture, 2 SWS Seminar, part of Applied Nanotechnology)

TUD Diploma (Maschinenwesen):

Grundlagen und Anwendung Zellulärer Maschinen (SS 2011)

(2 SWS Lecture)

<u>LECTURES:</u>	Mondays 3.00 pm - 4.30 pm, BIOTEC seminar room E05
<u>SEMINARS:</u>	Mondays 4.40 pm - 6.10 pm, BIOTEC seminar room E05
<u>PRACTICALS:</u>	for TUD Master Course on Molecular Bioengineering only, details will follow
<u>LECTURERS:</u>	Stefan Diez diez@bcube-dresden.de 463-43010
	Erik Schäffer erik.schaeffer@biotec.tu-dresden.de 463-40360
	Ralf Seidel ralf.seidel@biotec.tu-dresden.de 463-40333

Course Information:

- all information including lecture notes (always updated after the lecture) at https://intranet.biotec.tu-dresden.de/students/lectures_html
- General information also at <http://www.mpi-cbg.de/~diez/CellMach2011Gen.pdf>
- List of Referates also at <http://www.mpi-cbg.de/~diez/CellMach2011Ref>
- see also: <http://www.mpi-cbg.de/research/research-groups/stefan-diez/teaching.html>

Grades:

- TUD Master Course (Molecular Bioengineering):
50% oral examination (15-20 min in the weeks after the WS 2011/12 lecture period)
30% oral presentation (30 min) during the seminar (referate)
20% lab protocol (written during the practical)
- TUD Master Course (Nanobiophysics):
60% oral presentation (30 min) during the seminar (referate)
40% oral examination (with Bernd Büchner about the other 2 SWS Lecture)
- TUD Diploma (Maschinenwesen):
100 % oral examination (20 min in the weeks after the lecture period)

Referates (for Master Students from Molecular Bioengineering and Nanobiophysics):

- In each seminar, 3 students will each give an oral presentation on a specific in-depth subject.
- The particular subjects (related to the topic of the lecture on that day) will be defined by the lecturers. The subjects will be online published (<http://www.mpi->

cbg.del-diez/CellMach2011Ref about 2 weeks before the presentation is due. The subjects, which are accompanied by 1 or more publications (also to be found online) will be named REF_{xx} where xx = 02 ... 14 denotes the number of the lecture and y = A, B, C denotes the sequence of the presentations during the seminar. Students can sign up for the dates of their presentations during the first seminar on hardcopy.

- Each presentation should be planned as a **20 min talk** presented with a video projector. Bring your own computer (or that of a friend/colleague) or check with the lecturer before (the latest during the break) that your talk (brought on a USB stick or disk) plays properly! Supported file formats will be PowerPoint, KeyNote and PDF. Beware of technical problems when playing movie files on another computer! Partial usage of the black board (to explain certain aspects of the subject) is encouraged but not mandatory. After the talk, the presenter should lead an up to **10 min discussion** with the fellow students.
- The talk should focus on:
 - (i) Introduction to the subject / cellular machine to be presented. Here, usage of additional material like review articles or other original publications is encouraged. You may consider to look up the FIRST, the MOST IMPORTANT and the LATEST paper.
 - (ii) Presentation of the motivation + results + discussion of the findings in the specified publication(s). Be critical with the publication!
 - (iii) Own judgement of the findings in terms of: Will it be feasible in the future to apply the described cellular machine in an engineered environment (for nanotechnological, medical or other purposes)? What could such applications be? What is your own opinion?
- The discussion should focus on answering factual questions from the audience as well as on brainstorming futur(istic) applications.
- Each presenter should, at the day of the presentation: **Hand in an A4 hardcopy of the talk** (Thereby, the printout should have two-slides on each page, if possible printed double-sided on the front and back side of the paper) and send the pdf of the talk afterwards to diez@bcube-dresden.de
- Although not presenting talks themselves, the TUD Diploma (Maschinenwesen) students are welcome to stay during the seminars and participate in the discussions.

Lecture Topics (tentative schedule - changes possible):

#	Date	Topic	Referates
1	4.4.	Introduction	
2	11.4.	Lipid Bilayer Systems	REF02A, REF02B, REF02C
3	18.4.	Membrane Proteins	REF03A, REF03B, REF03C
	25.4.	---- (Holiday - Ostern)	
	2.5.	---- (Saxon Biotechnology Day)	
4	9.5.	Energy Conversion	REF04A, REF04B, REF04C
5	16.5.	Bacterial Machines Sensing	REF05A, REF05B, REF05C
6	23.5.	DNA/RNA Structure	REF06A, REF06B, REF06C
7	30.5.	DNA Machines	REF07A, REF07B, REF07C
8	6.6.	RNA Machines	REF08A, REF08B, REF08C
	13.6.	---- (Holiday - Pfingsten)	
9	20.6.	Protein Folding and Degradation	REF09A, REF09B, REF09C
10	27.6	Viruses	REF10A, REF10B, REF10C
11	4.7.	Nuclear Pores	REF11A, REF11B, REF11C
12	11.7.	Other machines + wrap up	REF12A, REF12B, REF12C