UNIVERSITÄT LEIPZIG

Lernerfolgskontrolle

Vor, während und nach der Vorlesung

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Michigan State University
z.Zt. Massachusetts Institute of Technology

MICHIGAN STATE UNIVERSITY

Technologie-Einsatz in der universitären Lehre?

Muss in die Lernumgebung eingebunden sein!

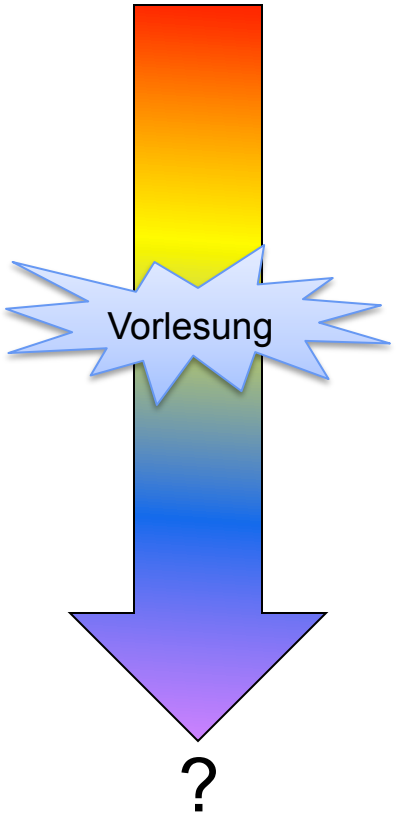
- Unterstützung der Lernziele
  - nicht Technologie um der Technologie willen
- Nicht vereinzelte Technologie-Höhepunkte
  - konsistenter Einsatz
  - Lernende müssen wissen, was sie zu erwarten haben, und was erwartet wird
- Technologie tritt in den Hintergrund
  - keine Show oder Spielerei
- Produktiv
  - Lernende interagieren mit den Materialen
  - Keine Zeitverschwendung für die Lernenden
- Effektives und zeitnahes Feedback an Lernende und Lehrende: **Lernerfolgskontrolle**

Assessment

- Feedback an Lehrende und Lernende
- Formatives Assessment:
  - Lernende können ihren Fortschritt verfolgen
    - Lernende bleiben nicht im Lernstoff zurück
      - Besonders in der Physik ein Problem, da Themen aufeinander aufbauen und Lücken unüberbrückbar werden können
  - Lehrende können den Fortschritt der Lernenden verfolgen
    - Können die Lehre dem Lernen anpassen
- Summatives Assessment:
  - Technologie erlaubt häufigere Klausuren

Überblick: Das Spektrum

- Vorlesungsvorbereitung
  - Online-Aufgaben vor der Vorlesung
  - Studierende kommen vorbereitet
  - Just-In-Time Teaching
- Während der Vorlesung
  - Clickers
- Vorlesungsnachbereitung
  - Hausübungen
  - Online-Diskussionen, “Helproom”
- Schließlich: Klausuren
- Hilft das überhaupt?
- Wie ist das realistisch möglich?
  - Kurs- und Lehrinhaltsverwaltung!
  - Nur in USA?



Vorlesungsvorbereitung

Studierende kommen vorbereitet

Just-In-Time Teaching

Online-Aufgaben vor der Vorlesung

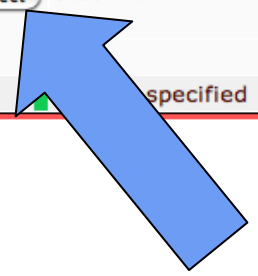
Gerd Kortemeyer (No Role, Cumulative Privileges) Messages Roles Help Logout

Main Menu

Menu » **User Roles**

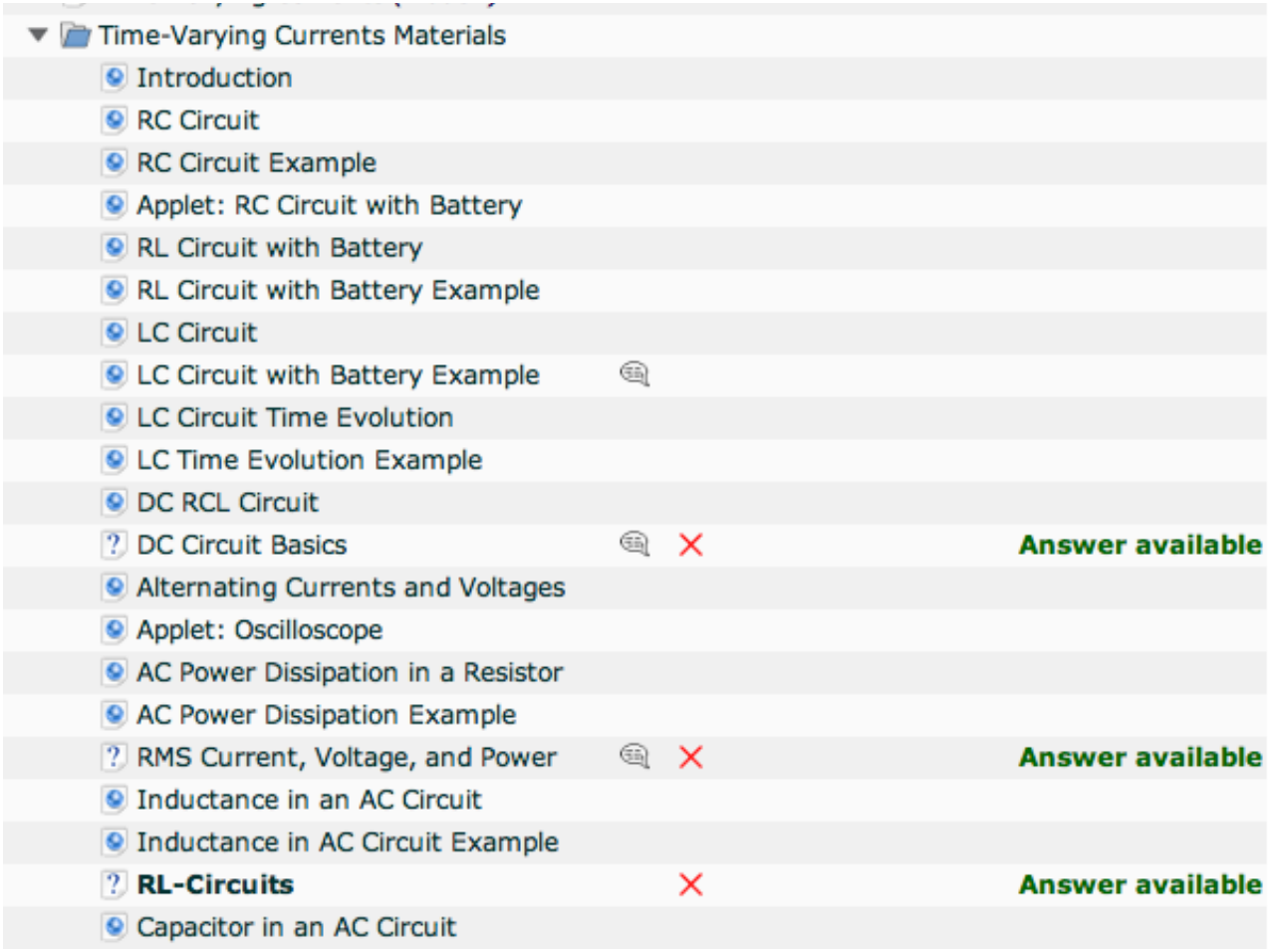
☐ Show all roles Update display

	User Role	Extent	Start	End
		Construction Space		
Select	Author	Domain: nds Server: vita.sonia.de	Tue May 11 12:13:40 am 2010 (CEST)	
		Course		
Select	Course Coordinator	Your Test Course Syllabus Domain:nds		
Select	Student	LB271, Fall 2008 - Intro Calculus-Based Physics I Syllabus Section: guest	Sun Aug 24 06:00:00 am 2008 (CEST)	Tue Dec 14 05:59:59 am 2010 (CET)
	specified			Currently selected.



Online-Aufgaben vor der Vorlesung

- Einfache Fragen, eingebettet in die online Materialien
- Fällig vor der Vorlesung



Online-Aufgaben vor der Vorlesung

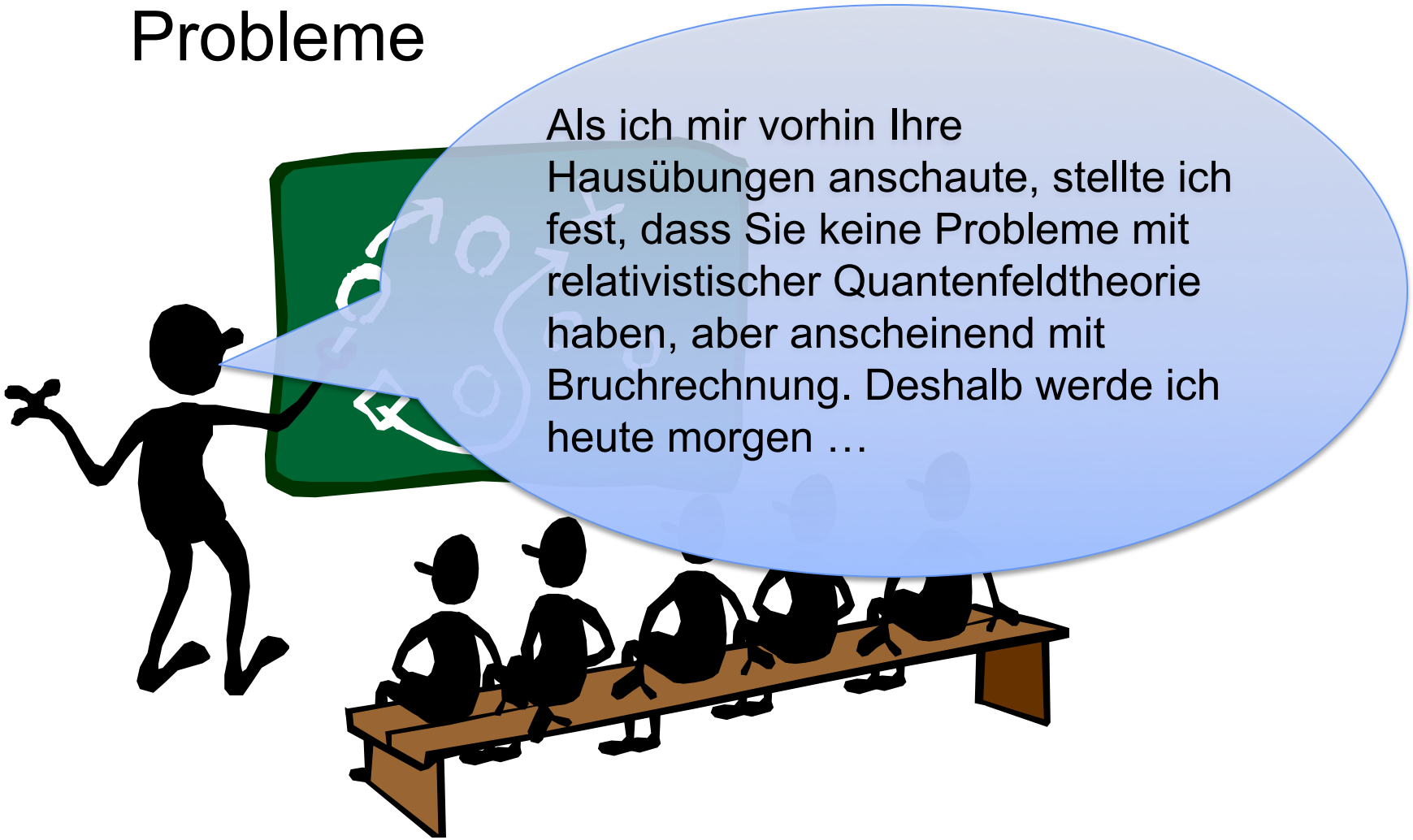
- Stellen sicher, dass die Studierenden die Materialien lesen
- Fragen können direkt basierend auf die Materialien beantwortet werden (niedriges Bloom-Level)
- Aufgaben leicht verschieden für verschiedene Studierende
  - Studierende können nicht einfach „abschreiben“
  - Mehr später
- Studierenden kommen vorbereitet

Which of the following statements are true?
False: In a circuit consisting of an AC voltage source and a resistor, the dissipated power is proportional to the current.
True: In a circuit consisting of an AC voltage source and a resistor, the voltage drop across the resistor and the voltage source are in phase.
True: The rms-voltage is proportional to the maximum AC-voltage.
True: In a circuit with a capacitor and inductance in series (no resistance), if the capacitor is initially charged, an un-damped harmonic oscillation takes place.

Computer's answer now shown above. Tries 0/6

Just-In-Time

- Anpassung der Vorlesung an tatsächliche Probleme



Just-In-Time

Course Action Items

Gerd Kortemeyer
Course Coordinator
LBS 272 - Spring 2006

LBS 272 - Spring 2006->Display Action Items

What's New?

Go to first resource

Page set to be displayed after you hav ... *What's New? page (user preference)* **Change** for just this course or for all your courses.

Hide all Show all

Diskussionen

Schwere Probleme

Problems requiring handgrading Hide

Problem Name	Number ungraded
Electric Field	4

Proble Hide

No problems with er

Problems with av. attempts ≥ 3 or deg. difficulty ≥ 0.8 and total number of students with submissions ≥ 4 Hide

Change thresholds?

Resource	Part	Num. students	Av. Attempts	Deg. Diff	Last Reset	Reset Count?
Field Lines	single part	24	2.12	0.84		
Net Force	single part	53	2.49	0.80		
Pith Balls	single part	52	4.12	0.90		

Reset counters to 0

Resources in course with version changes since last week Hide

Change interval?

Resource	Last revised	New version	Version used
Applet: Electron Orbit	Fri Jan 13 10:18:52 2006 (EST)	10	10
Capacitance of a Sphere	Mon Jan 16 12:03:13 2006	8	8

Unread course discussion posts Hide

Change options?

Location	Type	Time of last post	Number of new posts
Coulomb	Resource	last Monday, Jan 16 at 04:55 pm (EST)	1
Distance Change	Resource	last Monday, Jan 16 at 07:00 pm (EST)	1
Field Lines	Resource	last Monday, Jan 16 at 07:49 pm (EST)	1
Force	Resource	on Wednesday, Jan 11 at 07:01 pm (EST)	3
Net Force	Resource	23 hours, 19 minutes ago	5
Pith Balls	Resource	last Monday, Jan 16 at 09:21 pm (EST)	6
Point P	Resource	last Friday, Jan 13 at 02:34 pm (EST)	5
Potential	Resource	last Sunday, Jan 15 at 03:15 pm (EST)	1
Two Charges	Resource	last Sunday, Jan 15 at 03:26 pm (EST)	1
Vector	Resource	last Saturday, Jan 14 at 01:32 am (EST)	1
Vectors	Resource	last Saturday, Jan 14 at 12:09 pm (EST)	2

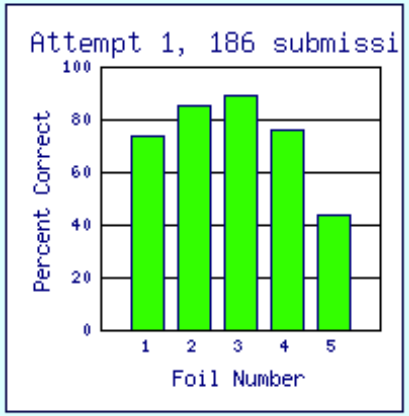
New course messages Hide

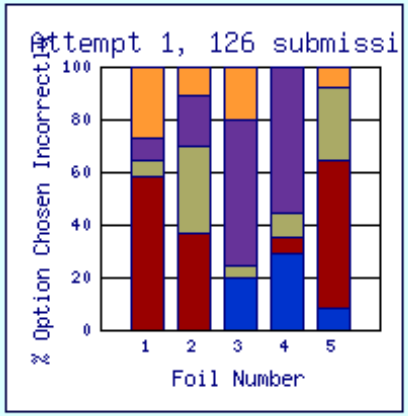
Number	Subject	Sender	Date/Time
1.	Feedback	[redacted]@msu	Sat Jan 14 10:45:02 2006 (EST)

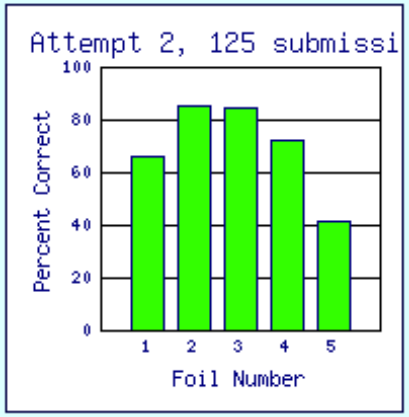
Unterstützung vor der Vorlesung durch Kursmanagementstatistiken

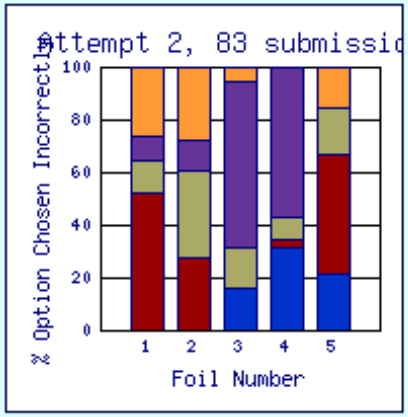
Just-In-Time

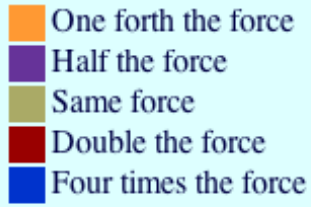
Foil Number	Foil Name	Foil Text	Correct Value
1	1_6_1_1_2	The distance between the two charges is cut in half.	Four times the force
2	1_6_1_2_2	The magnitude of both charges is doubled.	Four times the force
3	1_6_1_3_2	The magnitude of one of the two charges is doubled.	Double the force
4	1_6_1_4_2	The distance between the charges is doubled.	One forth the force
5	1_6_1_5_2	The charges are placed in a medium with a factor two higher permittivity.	Half the force

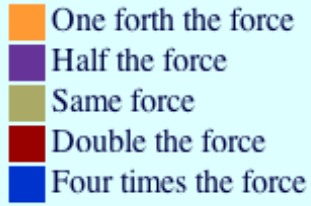












Während der Vorlesung

Clicker

Clicker

Leider nur zu oft: Anonyme Gruppe von Studierenden. Was geht in ihren Köpfen vor?

Clicker

- Radiofrequenz-Sender
- Einer pro Studierender
- Studierende können während der Vorlesung Antworten einreichen

Clicker

Capacitance and Dielectrics

So …

Before

After

$C=Q/V$

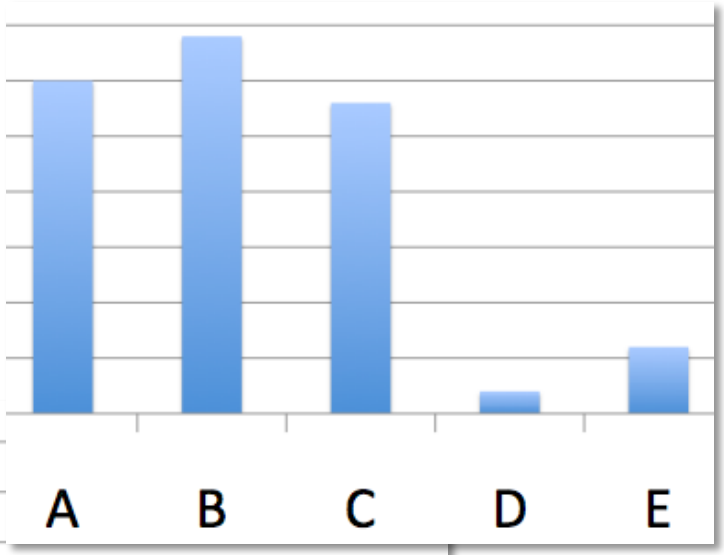
Voltage between the plates

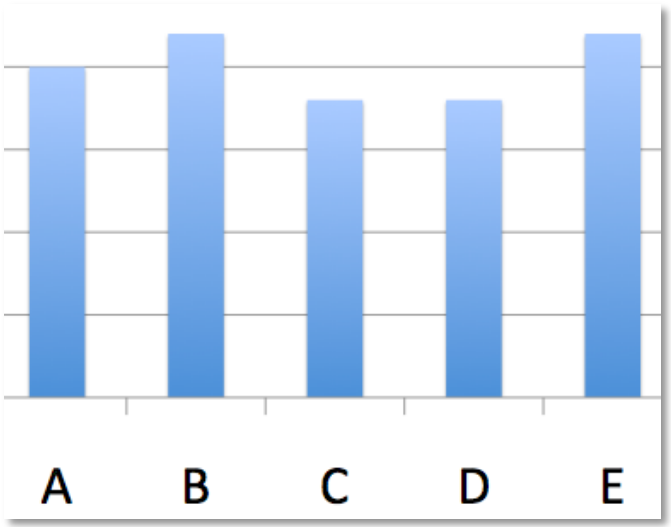
a) increases
b) decreases
c) stays the same

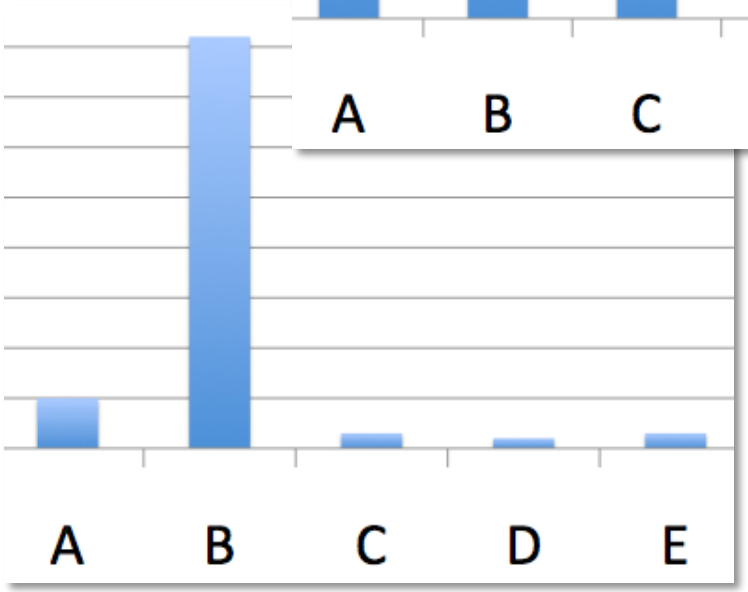
Clicker

Fortgang der Vorlesung hängt von Ergebnissen ab

- Noch einmal erklären
- Weitermachen
- Studierende diskutieren und noch einmal abstimmen lassen







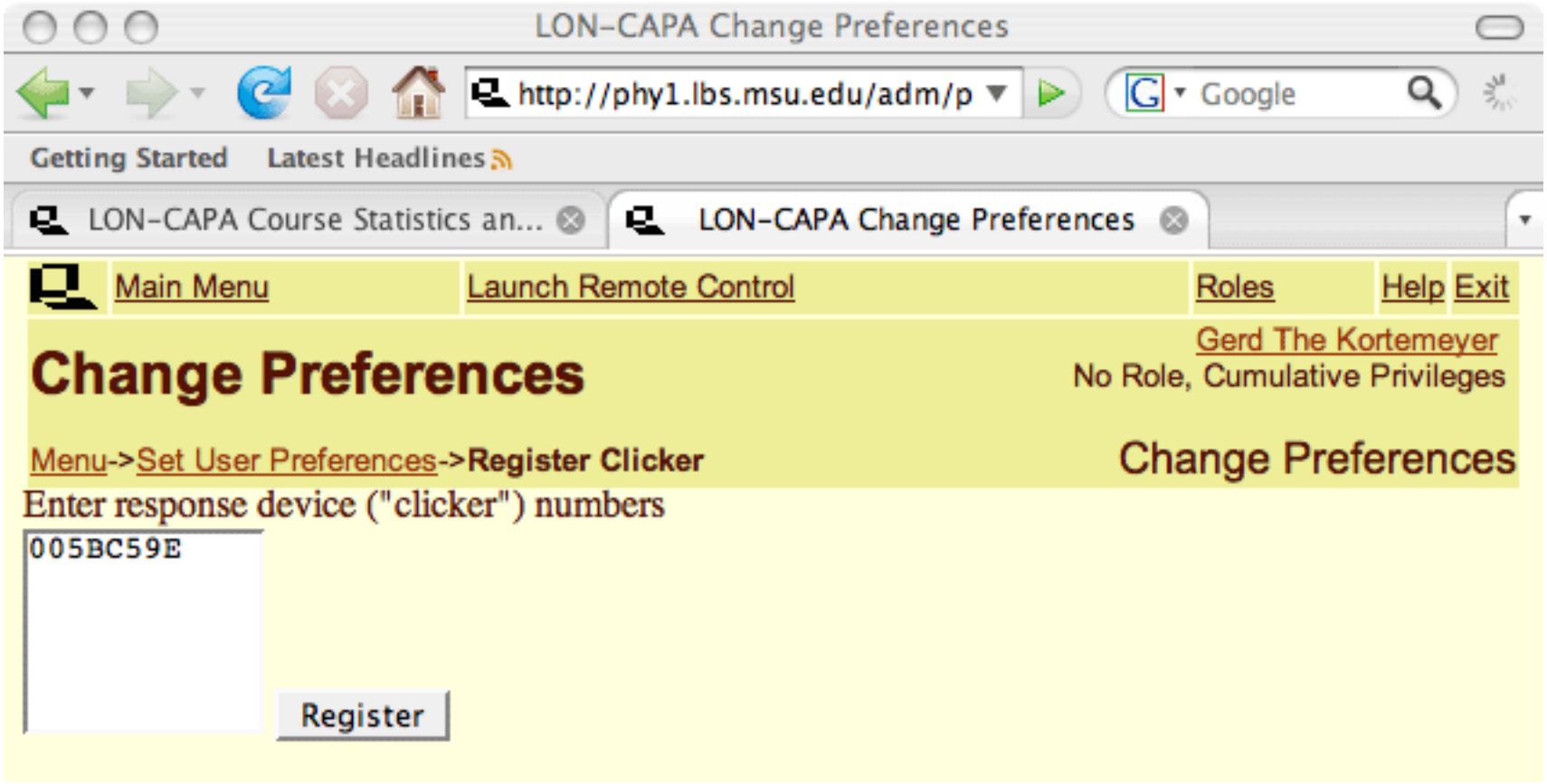
Clicker

„Peer-Instruction“

- Studierende können einander Konzepte manchmal besser erklären als wir
  - Persönlicher Kontakt
  - Wir haben häufig vergessen, wo die anfänglichen Probleme sind
- Studierende lernen beim Erklären
  - “Von dem Thema verstehe ich nichts, ich muss erst eine Vorlesung darüber geben”

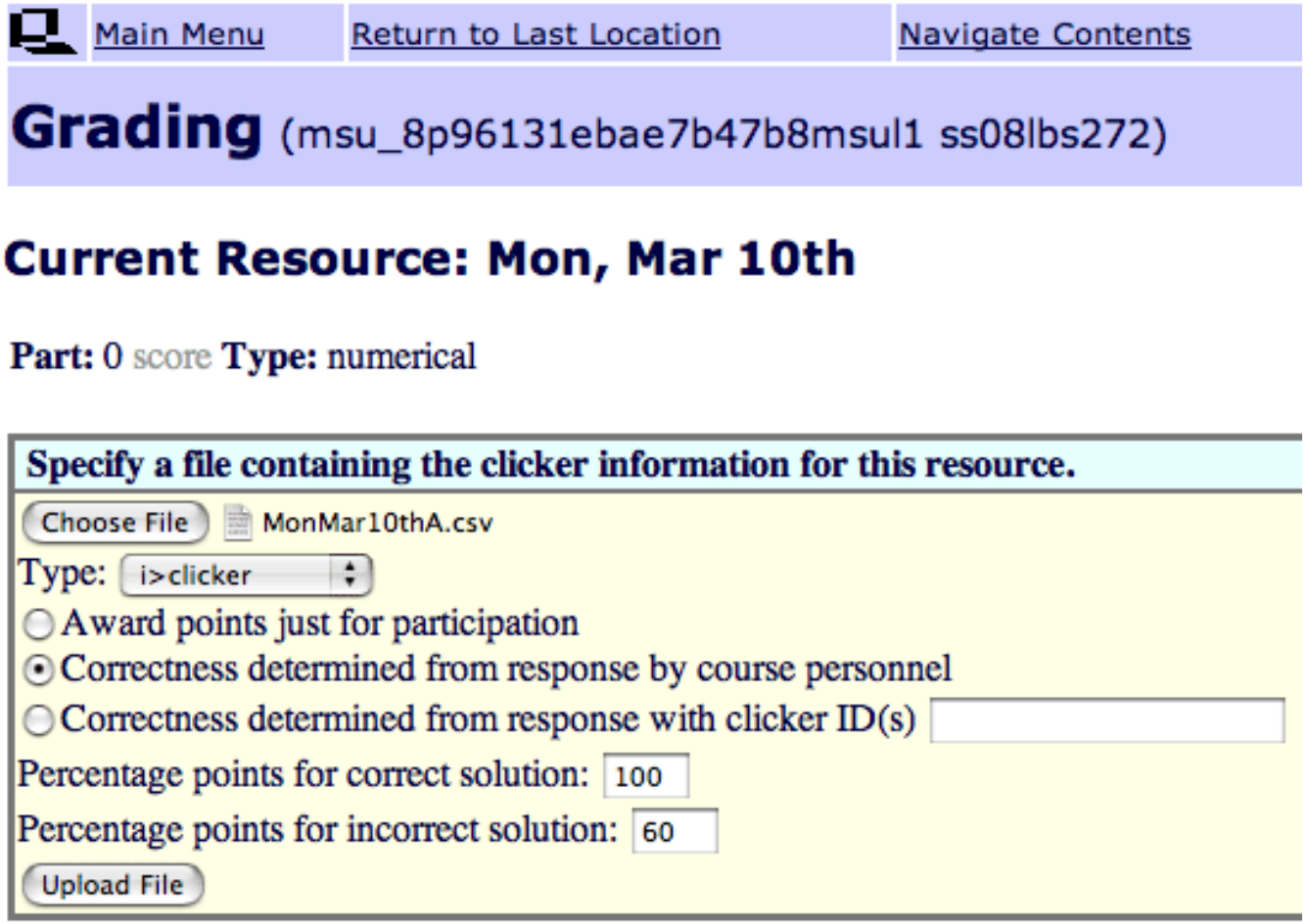
Clicker

- Studierende registrieren Clicker in LON-CAPA



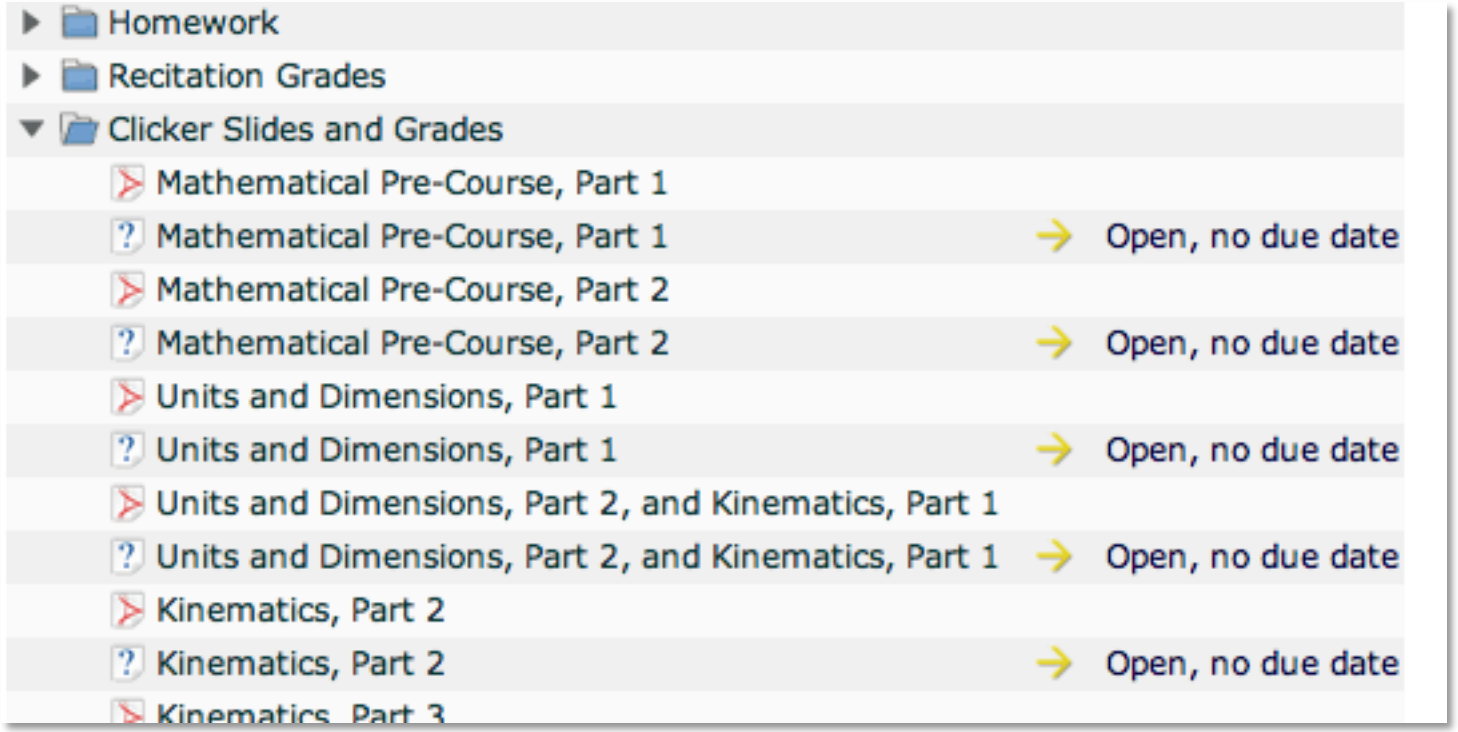
Clicker

- Punkte für korrekte und inkorrekte Antworten



Clicker

- Eingebunden in Kurs, zusammen mit Vorlesungsfolien



Vorlesungsnachbereitung

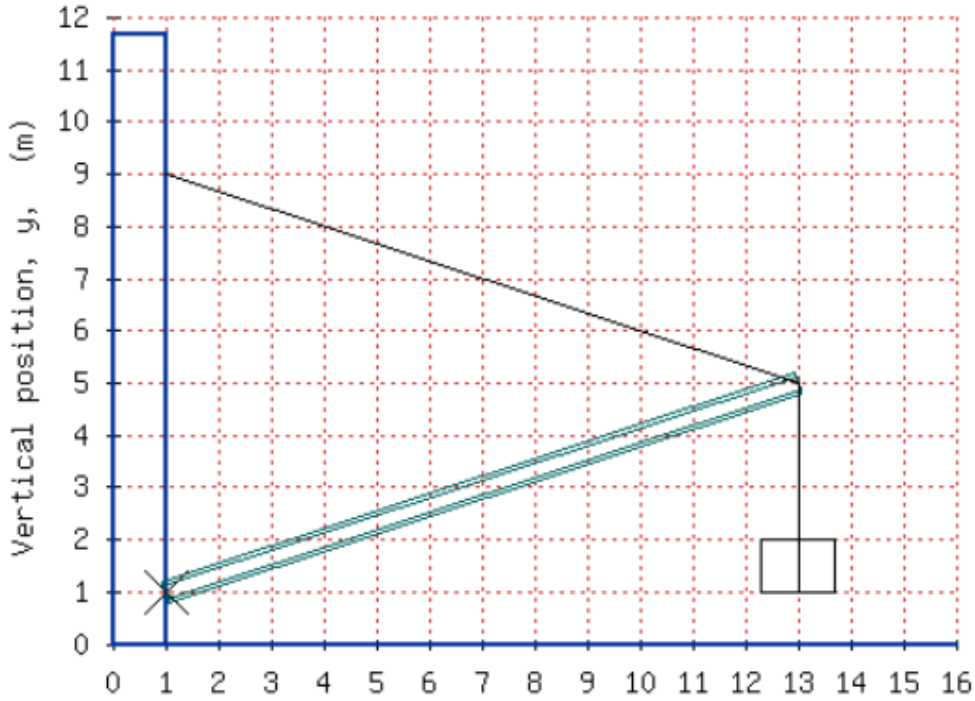
Hausübungen

“Helprooms”

Hausübungen

Randomisierte Probleme

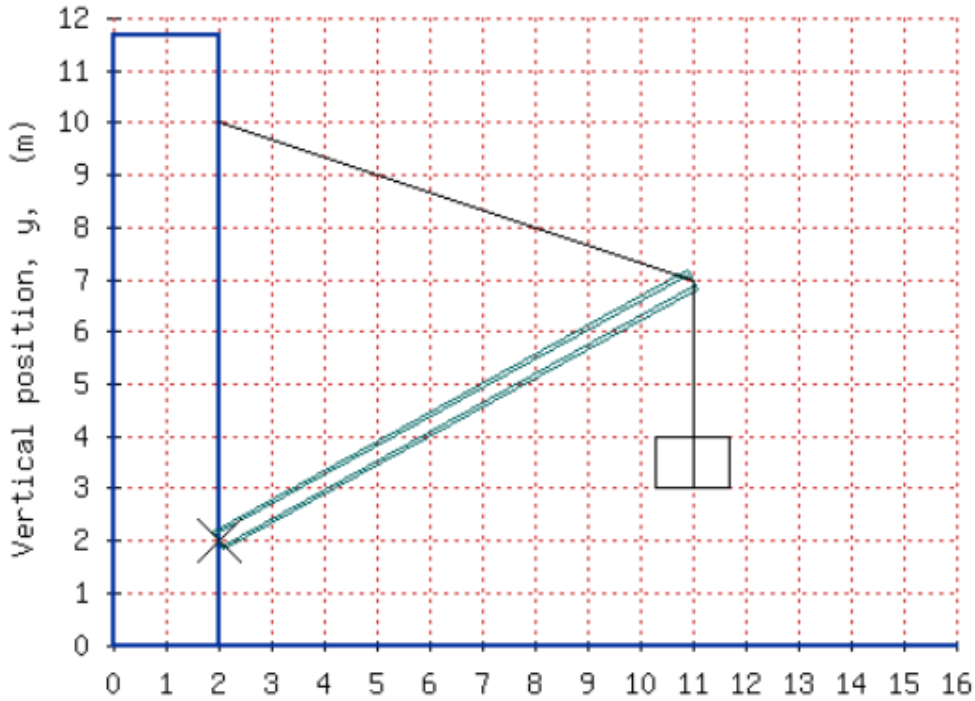
A crate with a mass of 155.5 kg is suspended from the end of a uniform boom with mass of 89.5 kg. The upper end of the boom is supported by a cable attached to the wall and the lower end by a pivot (marked X) on the same wall. Calculate the tension in the cable.



Hausübungen

Randomisierte Probleme

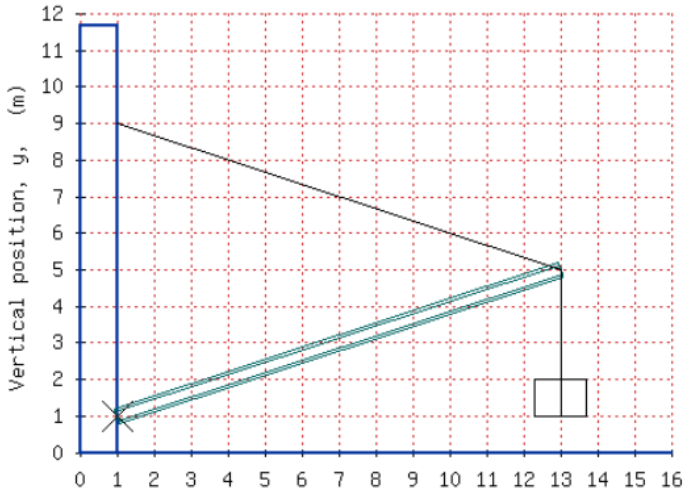
A crate with a mass of 177.5 kg is suspended from the end of a uniform boom with mass of 88.5 kg. The upper end of the boom is supported by a cable attached to the wall and the lower end by a pivot (marked X) on the same wall. Calculate the tension in the cable.



Hausübungen

Randomisierte Probleme: Studierende können und sollen zusammenarbeiten

A crate with a mass of 155.5 kg is suspended from the end of a uniform boom with mass of 89.5 kg. The upper end of the boom is supported by a cable attached to the wall and the lower end by a pivot (marked X) on the same wall. Calculate the tension in the cable.



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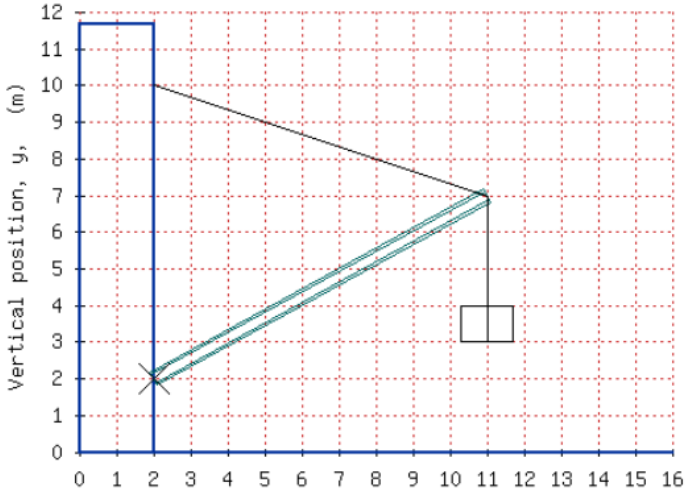


Hausübungen

- … besondere Stärken in Mathematik
  - Einschließlich Unterstützung von
    - LaTeX
    - Maxima
    - R

What is the derivative of

$$\begin{pmatrix} 4\,t^3 \\ 8\,t^8 \end{pmatrix}$$

with respect to t? 4t^2,8t^7

You need to multiply with the original exponent.

Submit Answer Incorrect. Tries 1

Give an example of a function

1. which is orthogonal to $6\cdot\cos(7\cdot x)-2\cdot\sin(2\cdot x)$ with respect to the scalar product

$$< g \mid h > = \frac{1}{\pi} \int_{-\pi}^{\pi} dx\, g(x) \cdot h(x)$$

2. whose norm is 1.

cos(2x)+sin(7x)

The function you have provided does not have a norm of one.

Submit Answer Incorrect. Tries 1

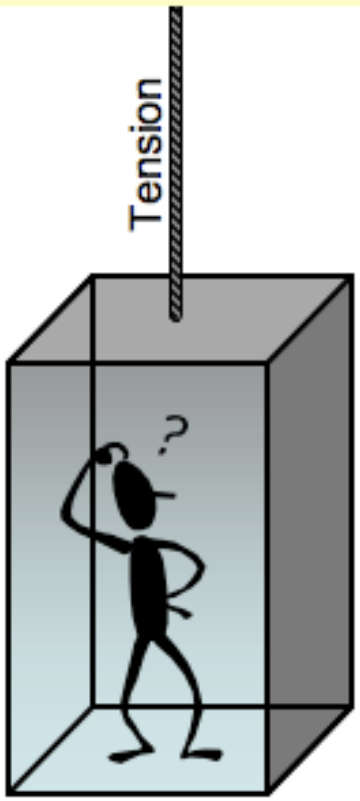
Hausübungen

- … Physikalische Einheiten

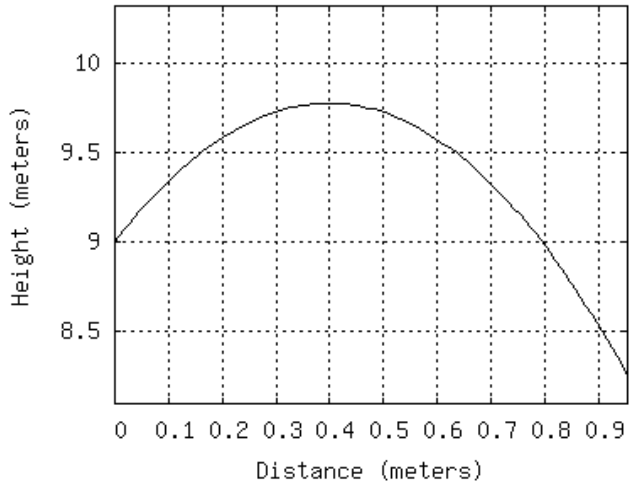
Elevator Problem Due never

An elevator (cabin mass 500 kg) is designed for a maximum load of 2600 kg, and to reach a velocity of 3 m/s in 5 s. For this scenario, what is the tension the elevator rope has to withstand? 32270 kg*m/s^2

Submit Answer Tries 0/99



Online Diskussionen



Diskussionen

Wiederrum:
Peer-Instruction.

The plot shows the trajectory (height versus distance) of an object launched at an angle of 75.6 degrees. What was the initial speed of the object? **4.0 m/s**
Computer's answer now shown above. Tries 0/12

Threaded View Chronological View Sorting/Filtering options Export?

Anonymous 1 (Fri Sep 22 01:26:29 2006 (EDT))

any hints to start?

Re: *Anonymous 2* (Fri Sep 22 01:56:48 2006 (EDT))

You need to find the Y component of velocity... you can do this by finding the height traveled (notice it does not start on the ground) and combining that with acceleration in a kinematics equation. From there use trig to get the original velocity.

Re: Re: *Anonymous 1* (Fri Sep 22 12:10:37 2006 (EDT))

how can we find the height traveled and how can we get the acceleration if we don't have the time?

Anonymous 3 (Fri Sep 22 16:41:27 2006 (EDT))

i'm lost on this one... can anyone help?

Re: *Anonymous 4* (Fri Sep 22 20:02:45 2006 (EDT))

Use the squared kinematics equation - so Vf^2 = Vi^2 + 2a (Xf-Xi).

Helprooms

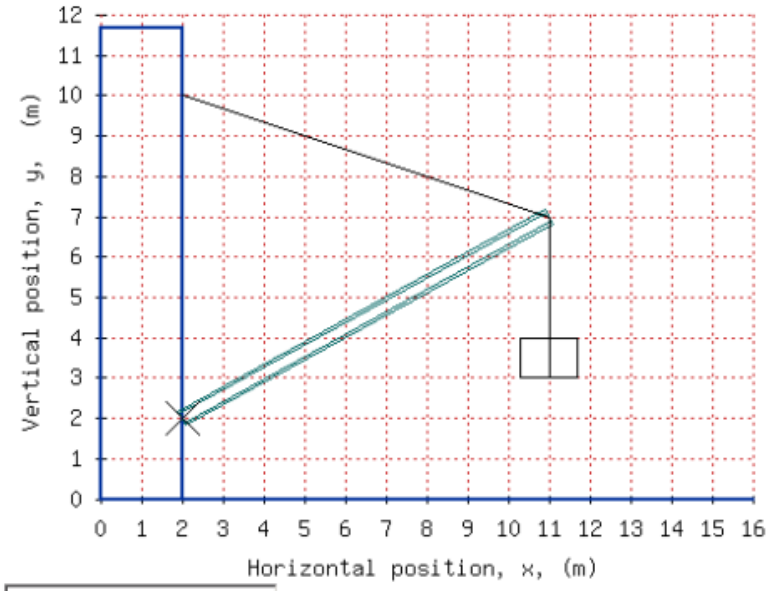
- HiWis abends verfügbar
- Kollaborativ
- Peer-Instruction
- Finden Sie den HiWi!

Klausuren

Klausuren

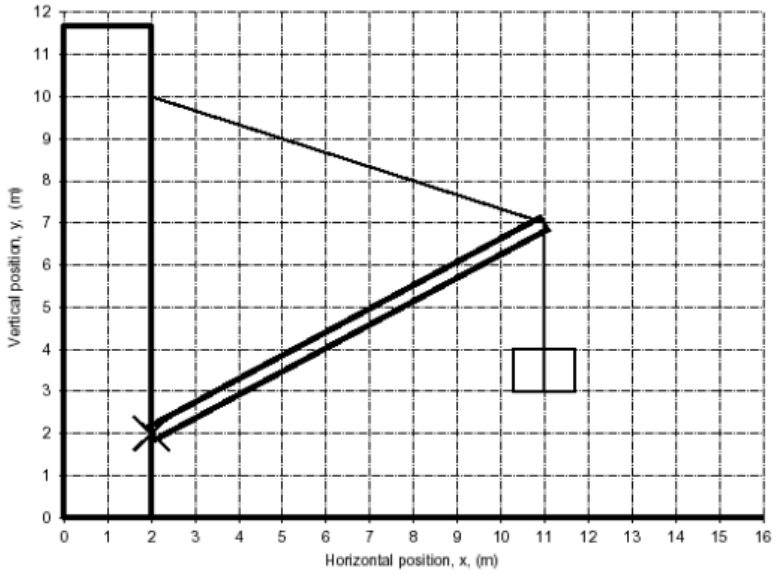
- Definitiv nicht kollaborativ!
- In USA: mangels Personal oft größtenteils “Bubblesheet”
- Jeder Studierende hat eine eigene Version

A crate with a mass of 177.5 kg is suspended from the end of a uniform boom with mass of 88.5 kg. The upper end of the boom is supported by a cable attached to the wall and the lower end by a pivot (marked X) on the same wall. Calculate the tension in the cable.



Submit Answer

1 pt A crate with a mass of 177.5 kg is suspended from the end of a uniform boom with mass of 88.5 kg. The upper end of the boom is supported by a cable attached to the wall and the lower end by a pivot (marked X) on the same wall. Calculate the tension in the cable.



(in N)

22. A○ 2.58×10^3 B○ 2.92×10^3 C○ 3.29×10^3
D○ 3.72×10^3 E○ 4.21×10^3 F○ 4.75×10^3
G○ 5.37×10^3 H○ 6.07×10^3

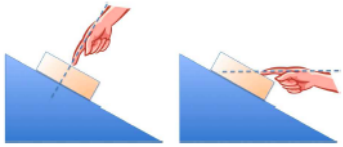
Klausuren

CODE - AACHDA
LB 271 - Introductory Physics Lecture
Version A

Name:

LB271 Fall 2009 Final Exam Version A

Gravitational Acceleration on Earth	$g = 9.81 m/s^2$
Gravitational Constant	$G = 6.67 \cdot 10^{-11} m^3/(kg \cdot s^2)$
Absolute Zero	-273.15°C
Gas Constant	$R = 8.31 J/(K \cdot mol)$
Boltzmann Constant	$k = 1.38 \cdot 10^{-23} J/K$
Avogadro's number	$N_A = 6.02 \cdot 10^{23}$ particles/mol
Specific heat of water vapor	$c_{vapor} = 0.48 kcal/(kg \cdot K)$
Specific heat of liquid water	$c_{water} = 1 kcal/(kg \cdot K) = 4186 J/(kg \cdot K)$
Specific heat of water ice	$c_{ice} = 0.5 kcal/(kg \cdot K)$
Latent heat of fusion for water	$L_f = 80 kcal/kg$
Latent heat of vaporizationfor water	$L_V = 540 kcal/kg$



A block is being held in place on an incline. The magnitude of the force applied by the hand on the block is the same in the left and the right scenarios.

1 pt In which scenario does the incline exert a lower normal force on the block?

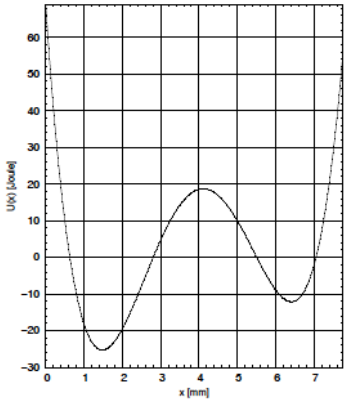
1. **A**○ The left scenario.
   B○ The right scenario.
   C○ Same in both scenarios.

1 pt In which scenario does the incline exert a lower frictional force on the block?

2. **A**○ The left scenario.
   B○ The right scenario.
   C○ Same in both scenarios.

1 pt By how many decibels does the sound intensity from a point source decrease if you increase the distance to it by a factor 6?

3. **A**○ 12.2 **B**○ 13.8 **C**○ 15.6 **D**○ 17.6
   E○ 19.9 **F**○ 22.5 **G**○ 25.4 **H**○ 28.7



1 pt
A particle is located at x=2.0 mm and has a kinetic energy of 29.5 Joule. What is the maximum x-coordinate the particle could reach? *(in mm)*

4. **A**○ 0.1 **B**○ 0.7 **C**○ 1.6 **D**○ 2.6
   E○ 3.2 **F**○ 4.7 **G**○ 5.3 **H**○ 7.6

Deep Space Nine sees Enterprise and a shuttle approach from exactly opposite directions with 0.8 c and 0.5 c, respectively.

1 pt At what fraction of the speed of light (β) does Enterprise see the shuttle approach?

5. **A**○ 0.00 **B**○ 0.50 **C**○ 0.83 **D**○ 0.91
   E○ 0.93 **F**○ 1.00 **G**○ 1.25 **H**○ 1.30

1 pt The shuttle has a length of 9 meters when at rest. How long is it in the system of Deep Space 9? *(in m)*

6. **A**○ 1.8 **B**○ 2.6 **C**○ 3.7 **D**○ 5.4
   E○ 7.8 **F**○ 11.3 **G**○ 16.4 **H**○ 23.8

1 pt Captain Picard on the Enterprise takes a 49 minute tea break. How long is this break in the system of Deep Space 9? *(in min)*

7. **A**○ 27 **B**○ 33 **C**○ 42 **D**○ 52
   E○ 65 **F**○ 82 **G**○ 102 **H**○ 128

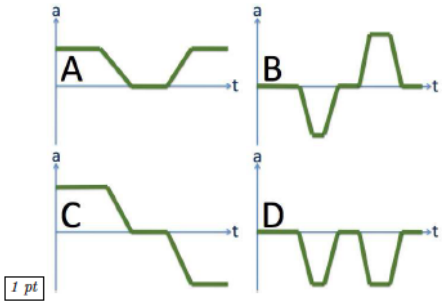
CODE - AACHDA
LB 271 - Introductory Physics Lecture
Version A

1 pt You have two organ pipes of the same length, one closed at both ends, one half open. Which one has a lower fundamental frequency?

8. **A**○ The closed pipe.
   B○ Same.
   C○ The half-open pipe.

1 pt In a very simple model of the lower atmosphere, air has a constant density of 1.26 kg/m³. How much would the air pressure change over a height difference of 130 m? *(in Pa)*

9. **A**○ 986 **B**○ 1110 **C**○ 1260 **D**○ 1420
   E○ 1610 **F**○ 1820 **G**○ 2050 **H**○ 2320

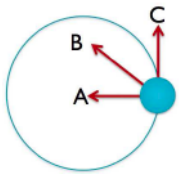


1 pt
A car drives in the forward (positive) direction. It first has a constant speed, then drives into a parking spot, waits for a few moments, and then drives out again backwards. Which one of the acceleration graphs could describe this scenario?

10. **A**○ Scenario A
    B○ Scenario B
    C○ Scenario C
    D○ Scenario D
    E○ None of the above.

1 pt
A box is sliding uphill as shown. What is the direction of the frictional force on the box?

11. **A**○ Downhill.
    B○ Perpendicular to the surface.
    C○ Uphill.
    D○ None of the above.



An object is rotating on a circular trajectory as shown. The indicated direction A is toward the center of the trajectory, C is tangential to the trajectory. The object is **rotating clockwise** and **slowing down**.

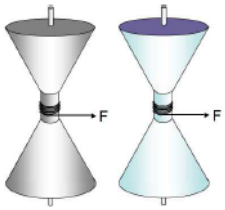
1 pt What could be the direction of the (linear) acceleration?

12. **A**○ Direction A.
    B○ Direction B.
    C○ Direction C.
    D○ Into the paper.
    E○ Out of the paper.

1 pt What could be the direction of the angular acceleration?

13. **A**○ Direction A.
    B○ Direction B.
    C○ Direction C.
    D○ Into the paper.
    E○ Out of the paper.

1 pt



You have two identical looking spools (same mass, same shape, same size). However, one is hollow, made from iron, the other is solid, made from aluminum. A string is wound around each spool. If you pull on both strings with equal forces, which spool is going to have the larger angular acceleration?

14. **A**○ Same
    B○ The solid spool
    C○ The hollow spool

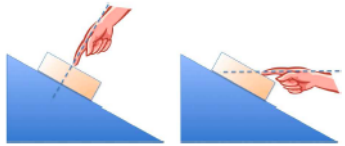
Klausuren

CODE - AAFIHH
LB 271 - Introductory Physics Lecture
Version A

Name:

LB271 Fall 2009 Final Exam Version A

Gravitational Acceleration on Earth	$g = 9.81 m/s^2$
Gravitational Constant	$G = 6.67 \cdot 10^{-11} m^3/(kg \cdot s^2)$
Absolute Zero	-273.15°C
Gas Constant	$R = 8.31 J/(K \cdot mol)$
Boltzmann Constant	$k = 1.38 \cdot 10^{-25} J/K$
Avogadro's number	$N_A = 6.02 \cdot 10^{25}$ particles/mol
Specific heat of water vapor	$c_{vapor} = 0.48 kcal/(kg \cdot K)$
Specific heat of liquid water	$c_{water} = 1 kcal/(kg \cdot K) = 4186 J/(kg \cdot K)$
Specific heat of water ice	$c_{ice} = 0.5 kcal/(kg \cdot K)$
Latent heat of fusion for water	$L_f = 80 kcal/kg$
Latent heat of vaporizationfor water	$L_v = 540 kcal/kg$



A block is being held in place on an incline. The magnitude of the force applied by the hand on the block is the same in the left and the right scenarios.

1 pt In which scenario does the incline exert a higher frictional force on the block?

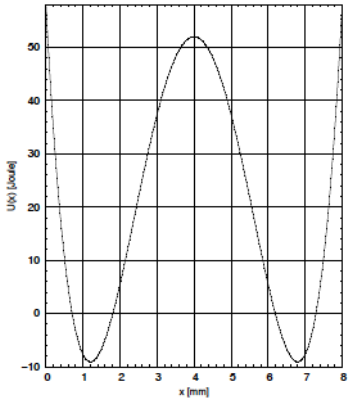
1. **A**○ The left scenario.
   B○ The right scenario.
   C○ Same in both scenarios.

1 pt In which scenario does the incline exert a higher normal force on the block?

2. **A**○ The left scenario.
   B○ The right scenario.
   C○ Same in both scenarios.

1 pt By how many decibels does the sound intensity from a point source decrease if you increase the distance to it by a factor 6?

3. **A**○ 7.10 **B**○ 8.31 **C**○ 9.72 **D**○ 11.4
   E○ 13.3 **F**○ 15.6 **G**○ 18.2 **H**○ 21.3



1 pt A particle is located at x=5.5 mm and has a kinetic energy of 9.8 Joule. What is the minimum x-coordinate the particle could reach? *(in* mm*)*

4. **A**○ 1.6 **B**○ 2.6 **C**○ 2.7 **D**○ 2.9
   E○ 3.0 **F**○ 3.8 **G**○ 5.2 **H**○ 6.9

Deep Space Nine sees Enterprise and a shuttle approach from exactly opposite directions with 0.8 c and 0.4 c, respectively.

1 pt At what fraction of the speed of light (β) does Enterprise see the shuttle approach?

5. **A**○ 0.00 **B**○ 0.47 **C**○ 0.50 **D**○ 0.59
   E○ 0.78 **F**○ 0.91 **G**○ 1.00 **H**○ 1.20

1 pt The shuttle has a length of 12 meters when at rest. How long is it in the system of Deep Space 9? *(in* m*)*

6. **A**○ 3.6 **B**○ 4.5 **C**○ 5.6 **D**○ 7.0
   E○ 8.8 **F**○ 11.0 **G**○ 13.7 **H**○ 17.2

1 pt Captain Picard on the Enterprise takes a 35 minute tea break. How long is this break in the system of Deep Space 9? *(in* min*)*

7. **A**○ 19 **B**○ 28 **C**○ 40 **D**○ 58
   E○ 85 **F**○ 123 **G**○ 178 **H**○ 258

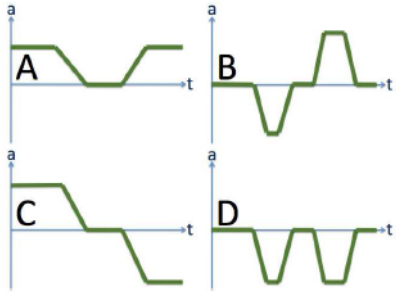
CODE - AAFIHH
LB 271 - Introductory Physics Lecture
Version A

1 pt You have two organ pipes of the same length, one closed at both ends, one half open. Which one has a lower fundamental frequency?

8. **A**○ Same.
   B○ The closed pipe.
   C○ The half-open pipe.

1 pt In a very simple model of the lower atmosphere, air has a constant density of 1.22 kg/m³. How much would the air pressure change over a height difference of 110 m? *(in* Pa*)*

9. **A**○ 1320 **B**○ 1490 **C**○ 1680 **D**○ 1900
   E○ 2150 **F**○ 2430 **G**○ 2740 **H**○ 3100



1 pt

A car drives in the forward (positive) direction. It first has a constant speed, then drives into a parking spot, waits for a few moments, and then drives out again backwards. Which one of the acceleration graphs could describe this scenario?

10. **A**○ Scenario A
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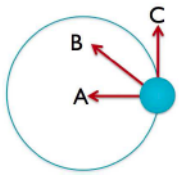
    C○ Scenario C
    D○ Scenario D
    E○ None of the above.

1 pt

A box is sliding uphill as shown. What is the direction of the frictional force on the box?

11. **A**○ Perpendicular to the surface.
    B○ Downhill.
    C○ Uphill.
    D○ None of the above.



An object is rotating on a circular trajectory as shown. The indicated direction A is toward the center of the trajectory, C is tangential to the trajectory. The object is **rotating clockwise** and **slowing down**.

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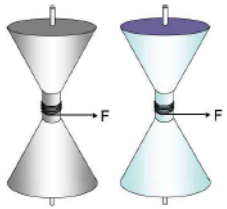
1 pt

You have two identical looking spools (same mass, same shape, same size). However, one is hollow, made from iron, the other is solid, made from aluminum. A string is wound around each spool. If you pull on both strings with equal forces, which spool is going to have the larger angular acceleration?



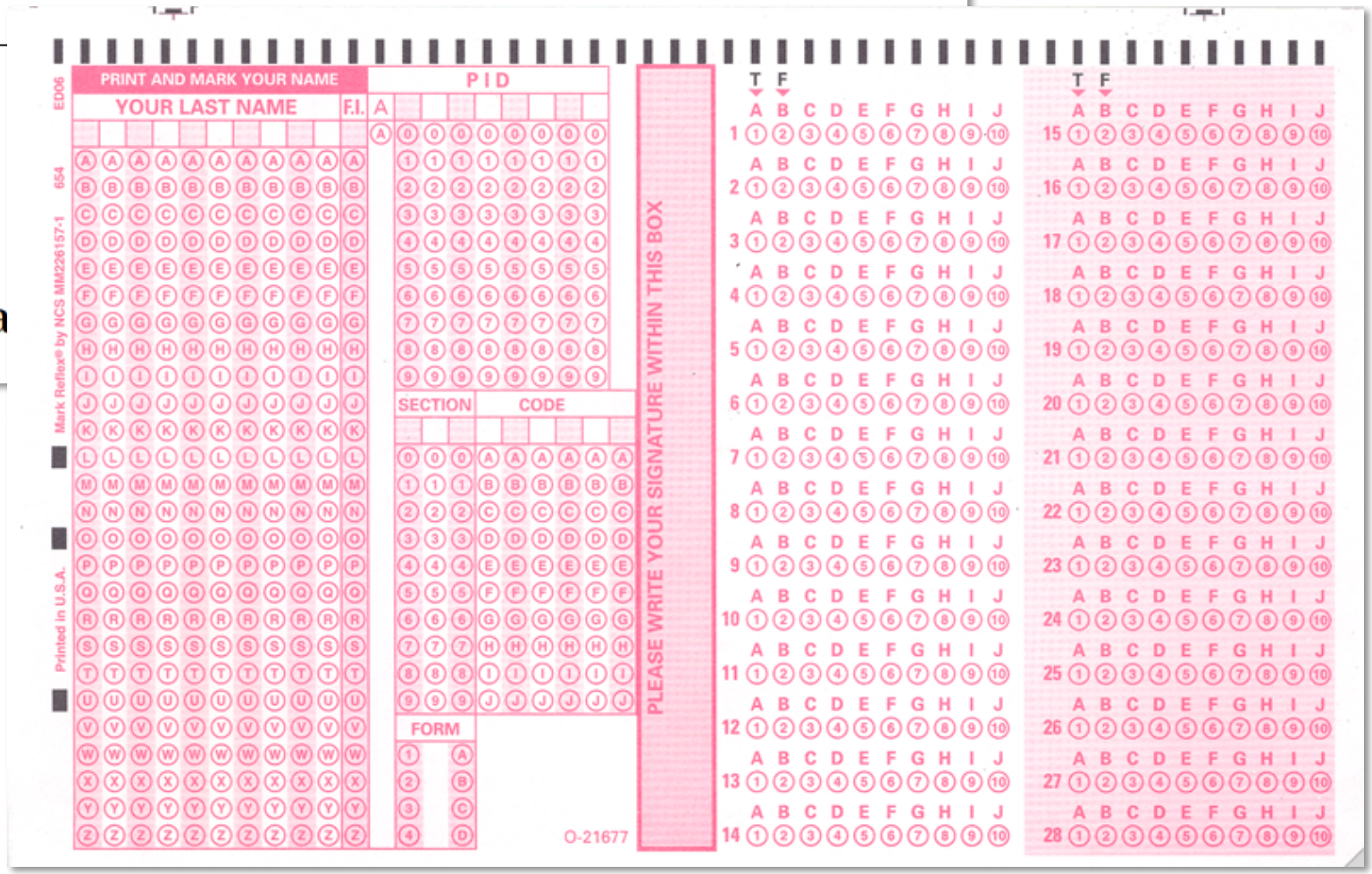
14. **A**○ The solid spool
    B○ The hollow spool
    C○ Same

Klausuren

CODE - AACHDA
LB 271 - Introductory Physics Lecture
Version A

Name:

LB271 Fa



Klausuren

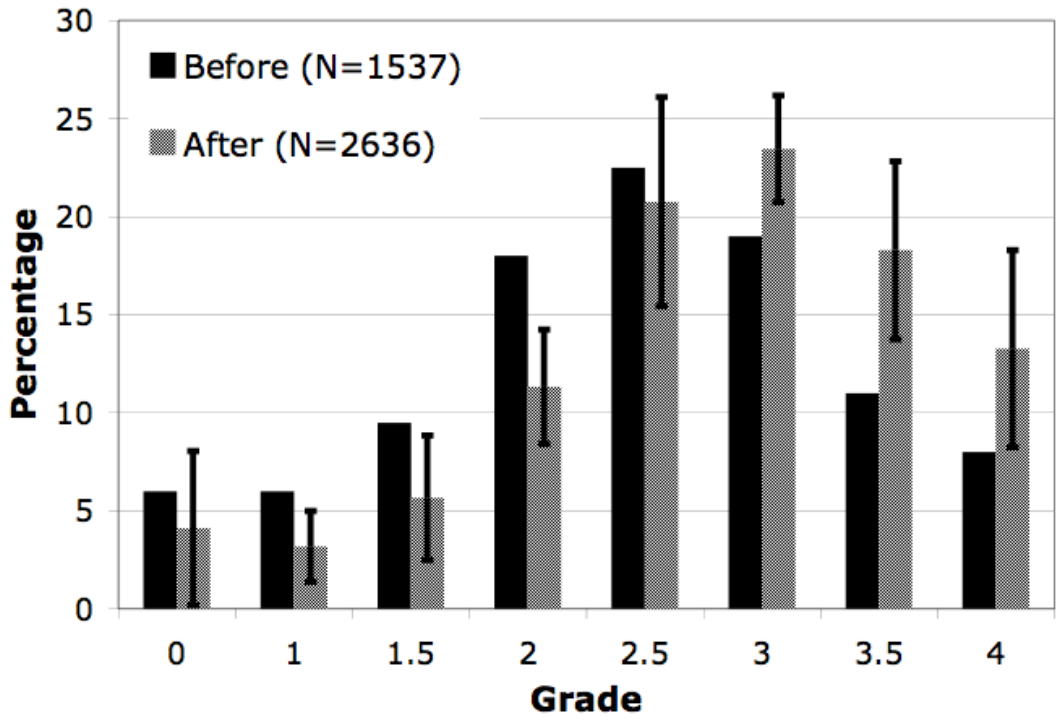
- Technologie erlaubt es, häufiger kleinere Klausuren zu geben
- Früherkennung von Problemen
- Studierende fallen nicht hinterher
- Ein “Ausrutscher” keine Tragödie
- Wird von Studierenden klar bevorzugt in Kursevaluationen

Bevor wir weitermachen …

… hilft das alles eigentlich?

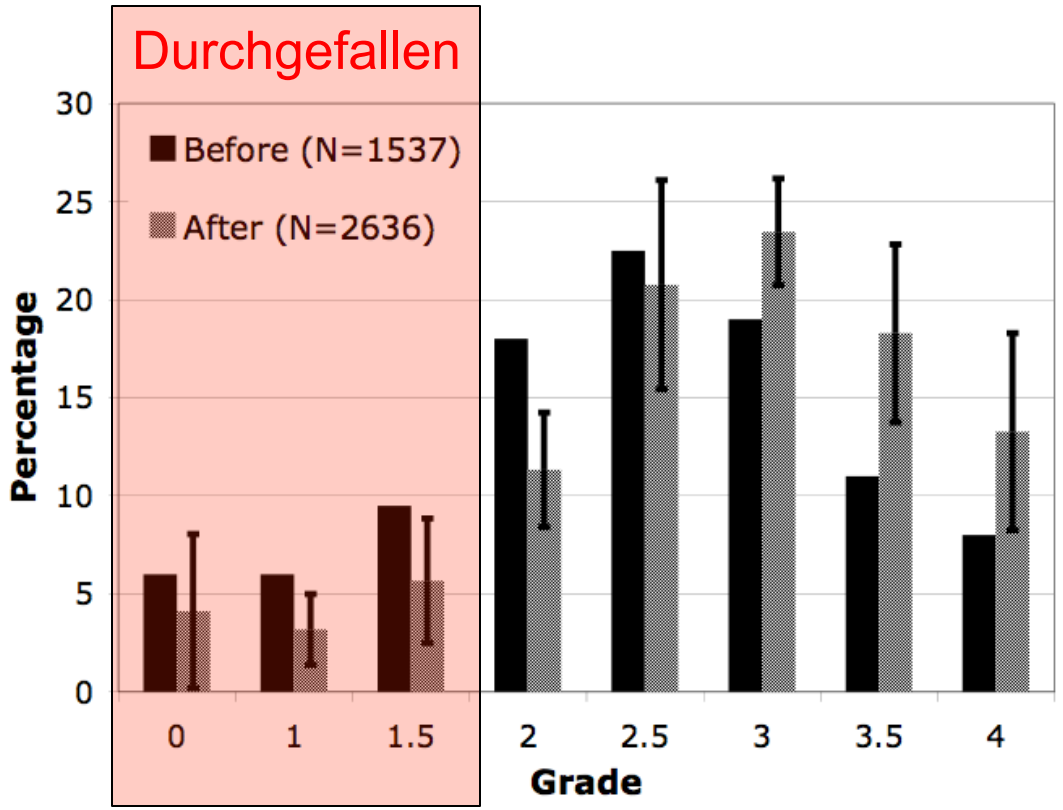
Lernerfolg

•Einführender Physikkurs für Nebenfächler
• Noten vor und nach der Einführung von online Hausübungen



Lernerfolg

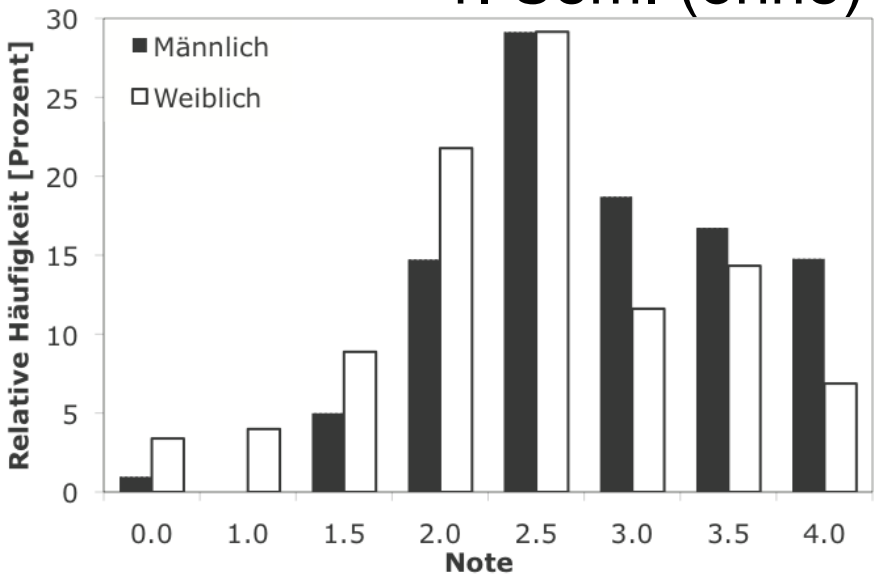
Hilft besonders Studierenden, die auf der Schwelle zum Durchfallen stehen.



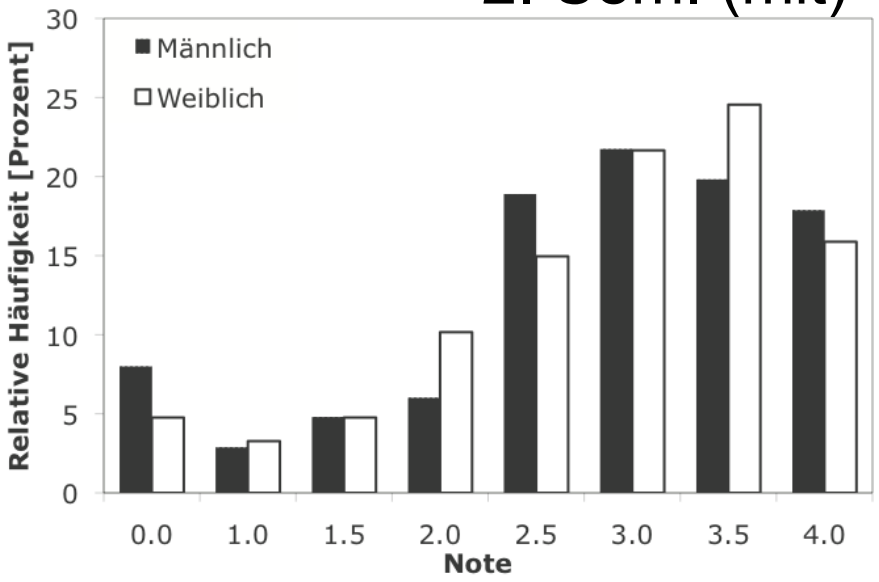
Lernerfolg

- Geschlechterspezifisch (anderer Physikkurs)

1. Sem. (ohne)



2. Sem. (mit)



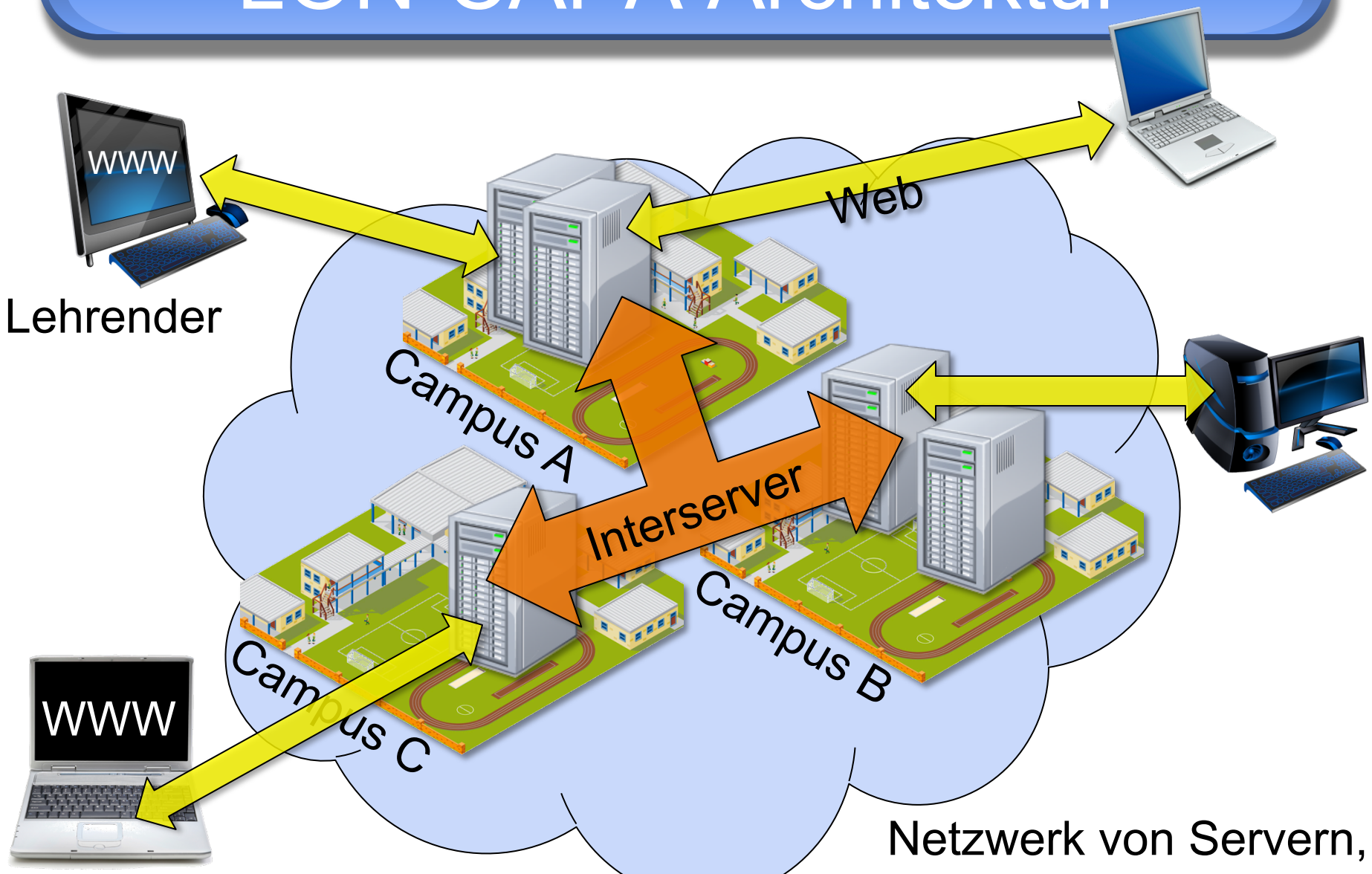
Wie ist der realistisch möglich?

Das verlangt sehr viele Aufgaben!

Wiederverwendung

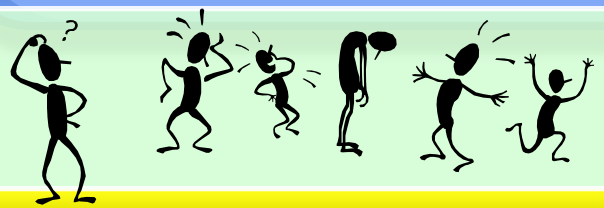
- Das Erstellen von online Materialien ist viel Arbeit
- Zuviel Arbeit für einen einzigen Kurs
- Viele Materialien sind leicht zwischen Kursen und Institutionen austauschbar

LON-CAPA Architektur



Netzwerk von Servern,
das Schulen und Universitäten verbindet

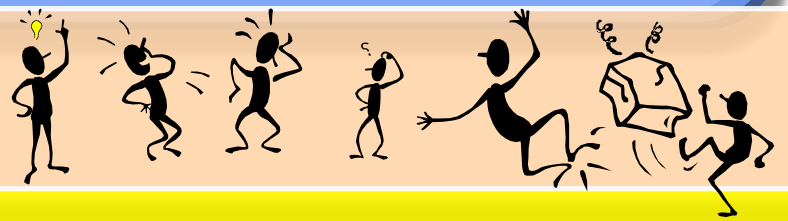
LON-CAPA Architektur



Kursverwaltung

Campus A

Mixing/Sequencing



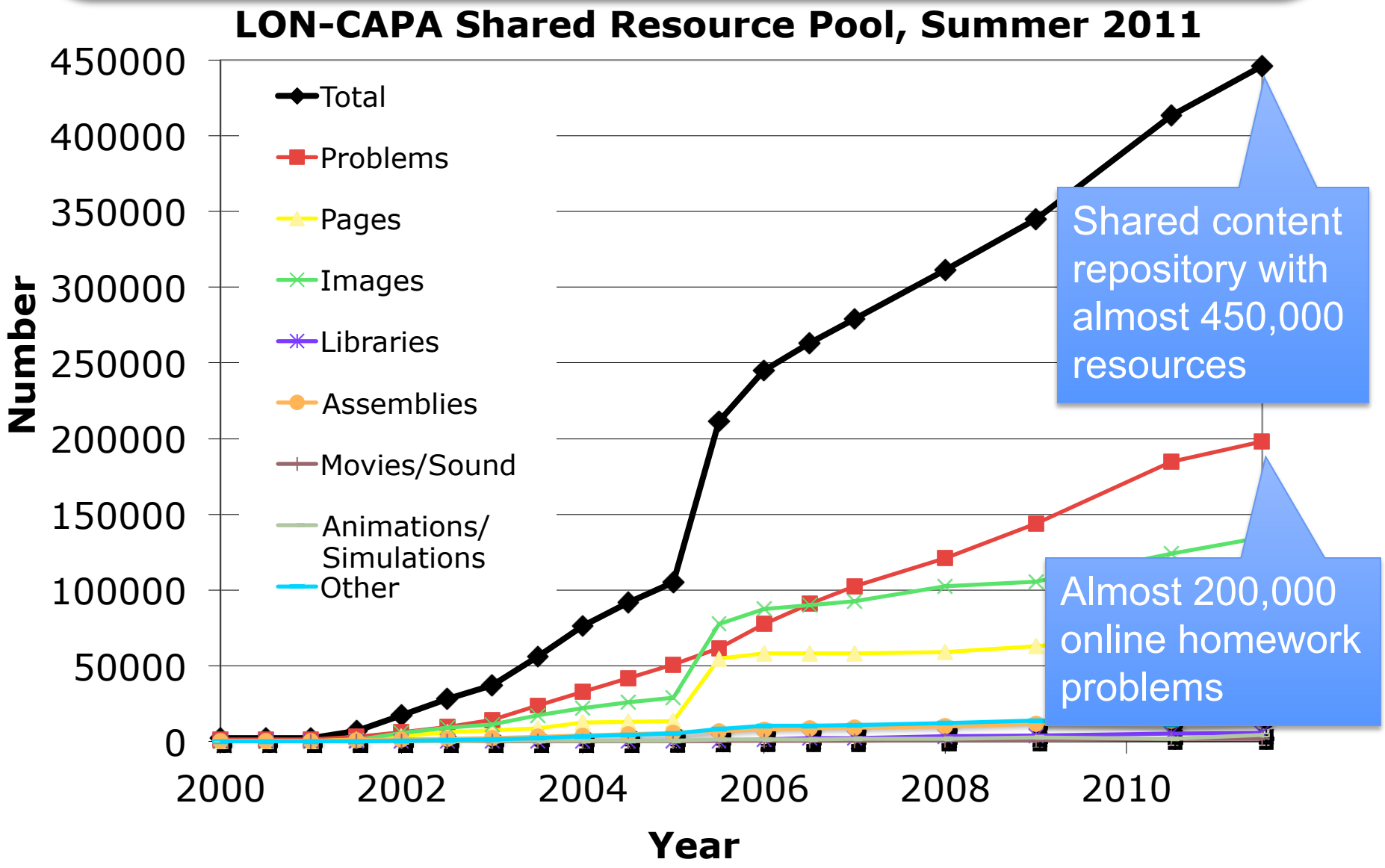
Kursverwaltung

Campus B

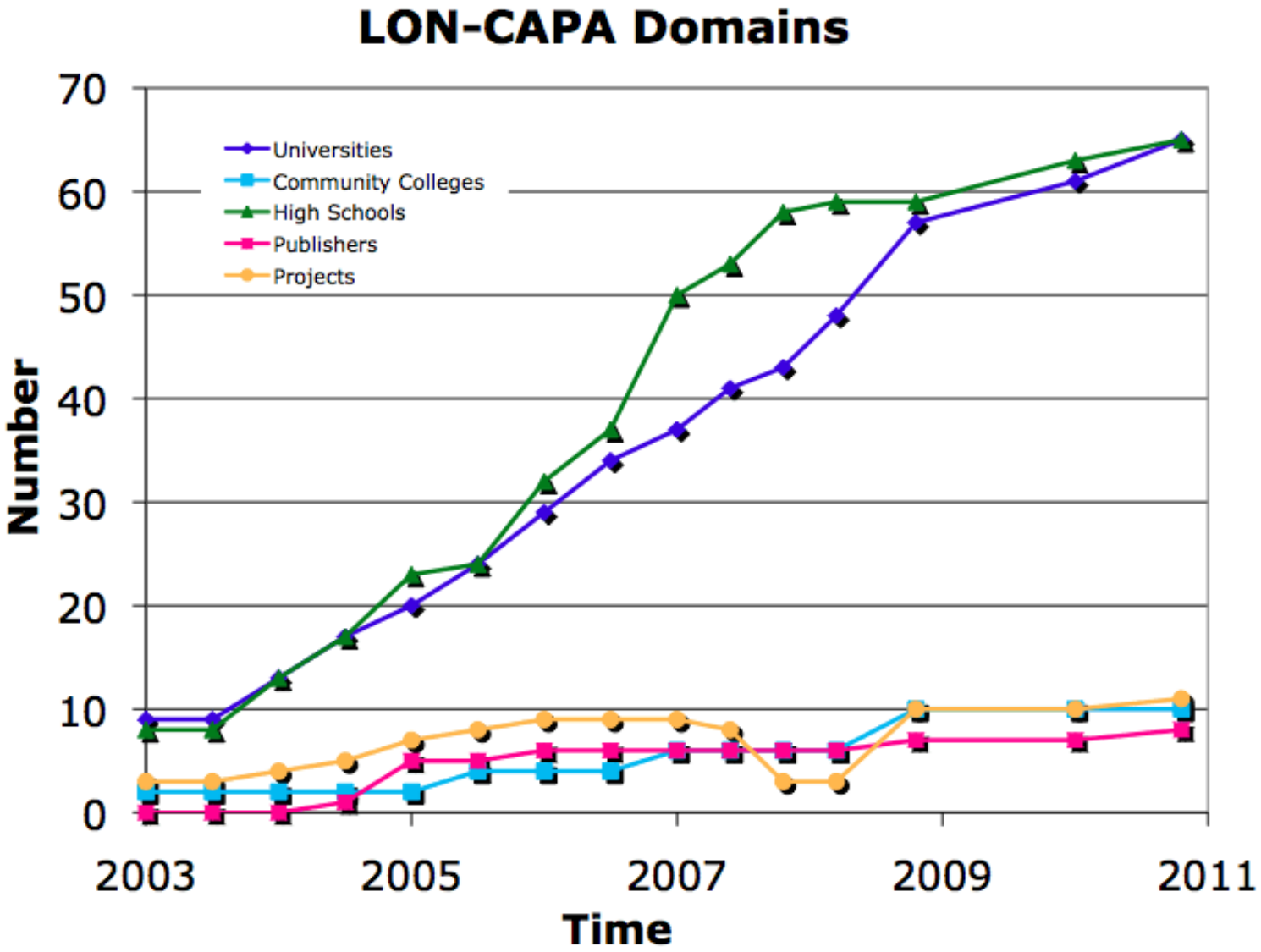
Mixing/Sequencing

Gemeinsames Digital Library System

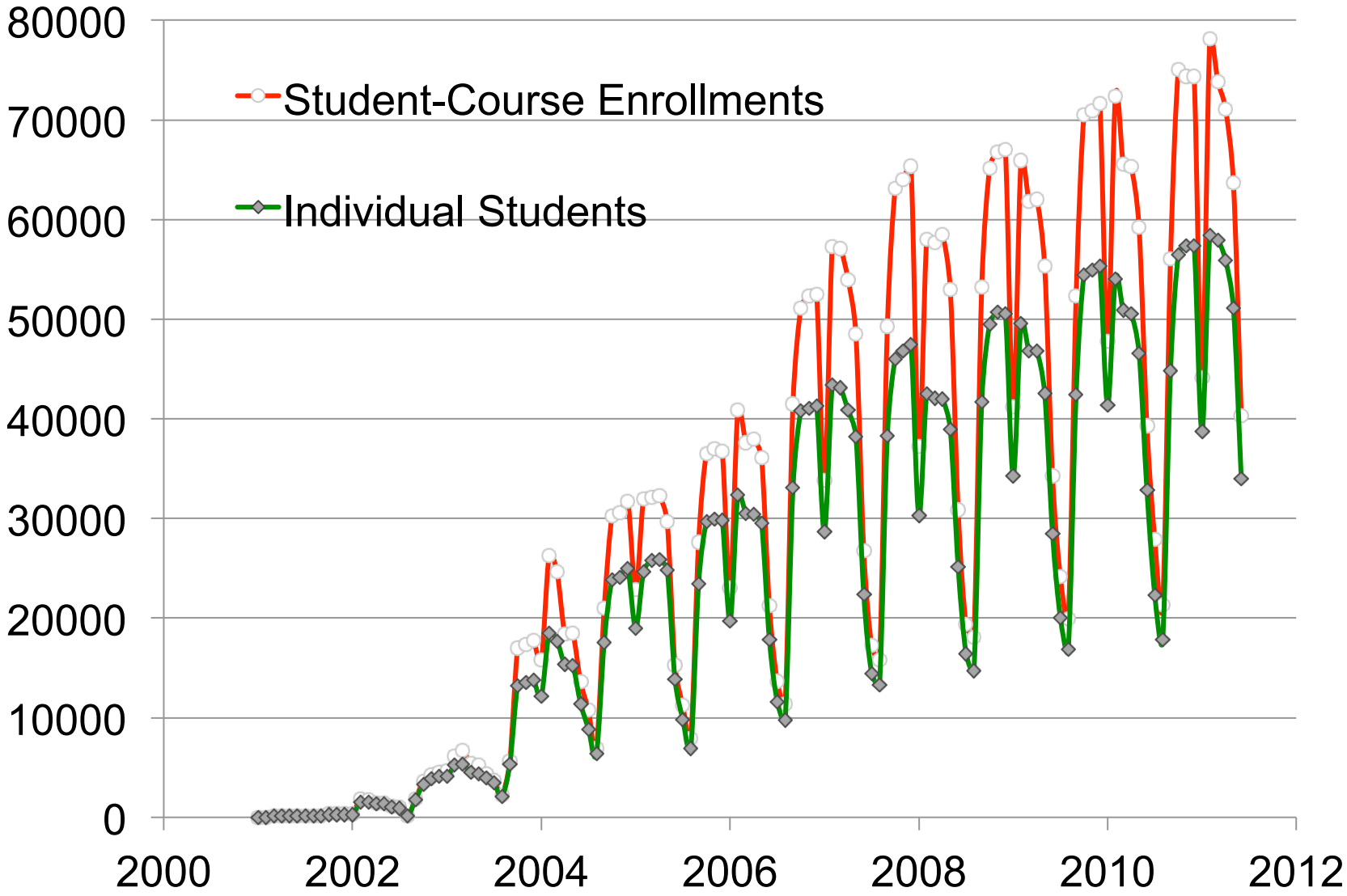
Die LON-CAPA Gemeinschaft



Die LON-CAPA Gemeinschaft



LON-CAPA Einschreibungen



In Arbeit: Empfehlungssystem

Initializing ... Resource data ... Associations ... Basket Associations ... Taxonomies ...

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accounting:(639) advertising:(2043) astronomy:(5981) biochemistry:(2194) biology:(49872) botany:(88751) chemistry:(35725) computerscience:(1199) design:(450) ecology:(1708) engineering:(2180) finance:(1568) geology:(2388) geometry:(546) history:(263) languages:(13) mathematics:(11868) medicine:(5067) nursing:(8) nutrition:(594) philosophy:(10) physics:(112158) psychology:(527) statistics:(3084) zoology:(218)

Search:

Current Basket

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/res/msu/kortemey/physicslib/momentum/soyuziss.problem Remove
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/res/msu/kortemey/physicslib/momentum/superman.problem Remove
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/res/fsu/GeneralChemLib/Lab/Density/Metals.problem Remove
/res/ohiou/OUp200lib/sfChpt6/sf0615a.problem Remove

Basket taxonomies:chemistry:introduction:(2708) physics:mechanics:linearmomentum:(1362)

Basket Recommendations

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/res/ohiou/cutnell/Chap07/cj-prob0712.problem Add

In Arbeit: Empfehlungssystem

Initializing ... Resource data ... Associations ... Basket Associations ... Taxonomies ...

accounting:(639) advertising:(2043) astronomy:(5981) biochemistry:(2194) biology:(49872) botany:(88751) chemistry:(35725) computerscience:(1199) design:(450) ecology:(1708) engineering:(2180) finance:(1568) geology:(2388) geometry:(546) history:(263) languages:(13) mathematics:(11868) medicine:(5067) nursing:(8) nutrition:(594) philosophy:(10) physics:(112158) psychology:(527) statistics:(3084) zoology:(218)

Basket taxonomies:chemistry:introduction:(2708) physics:mechanics:linearmomentum:(1362)

Basket Recommendations

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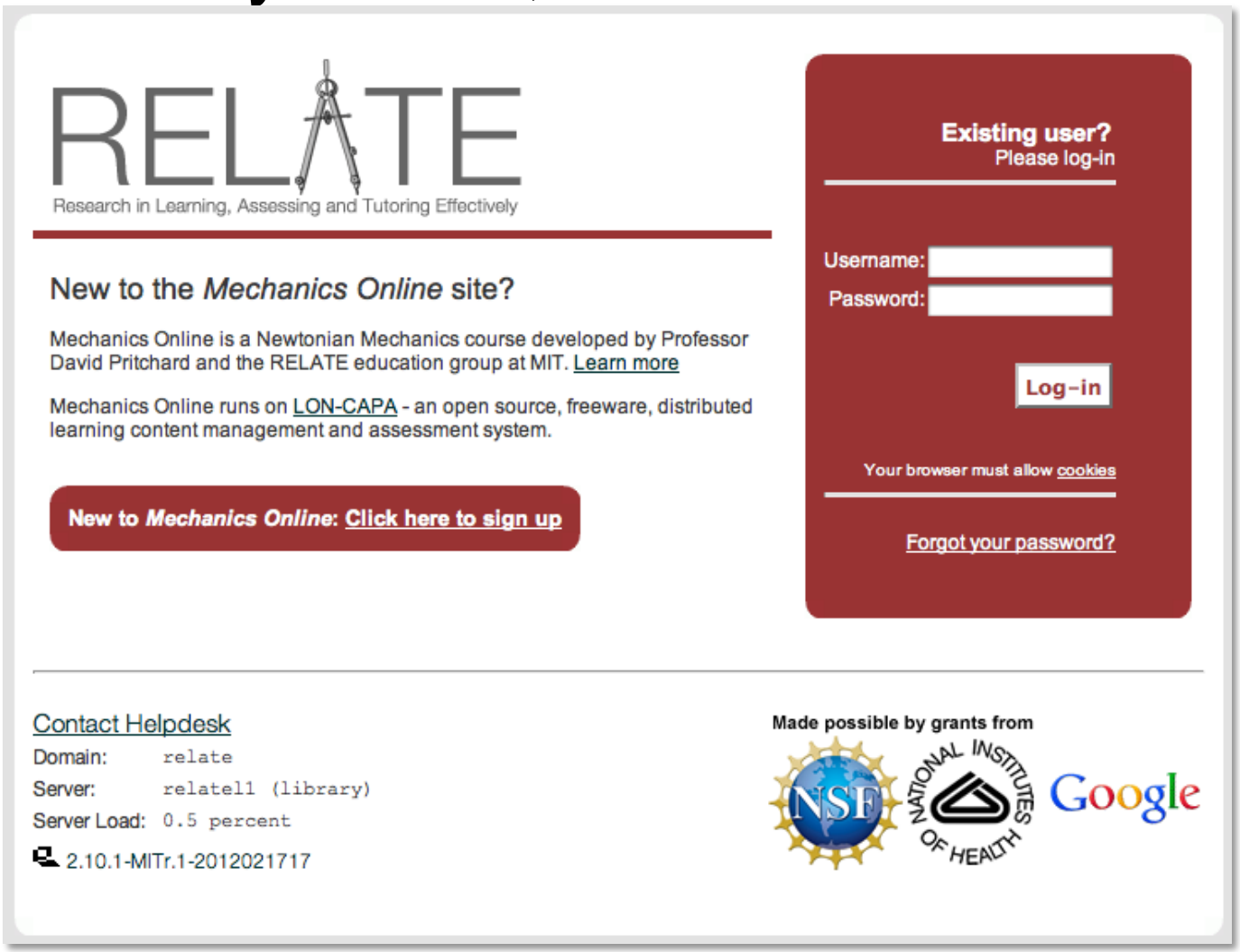
Neue Richtung: Offene Kurse

- MIT Physikkurs, offen für alle

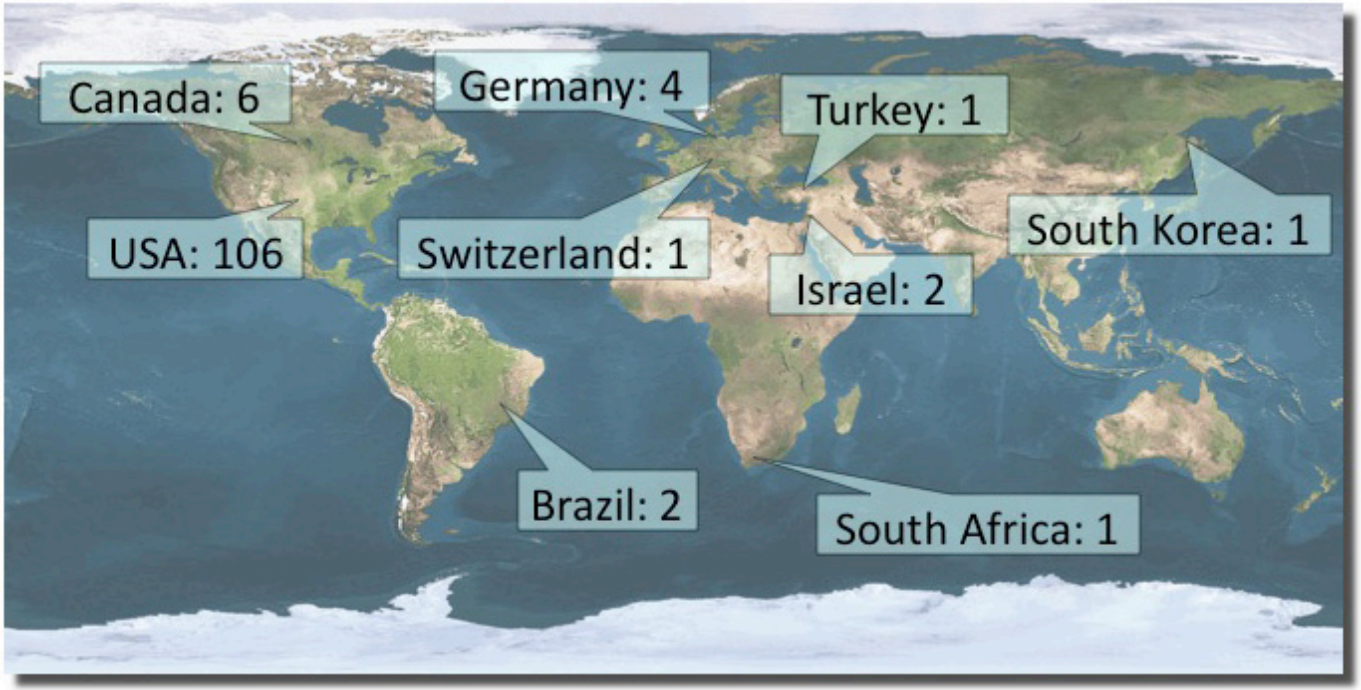


Neue Richtung: Offene Kurse

- Online Materialien, Hausübungen und Quize

Nur in den USA?

Nur in den USA?



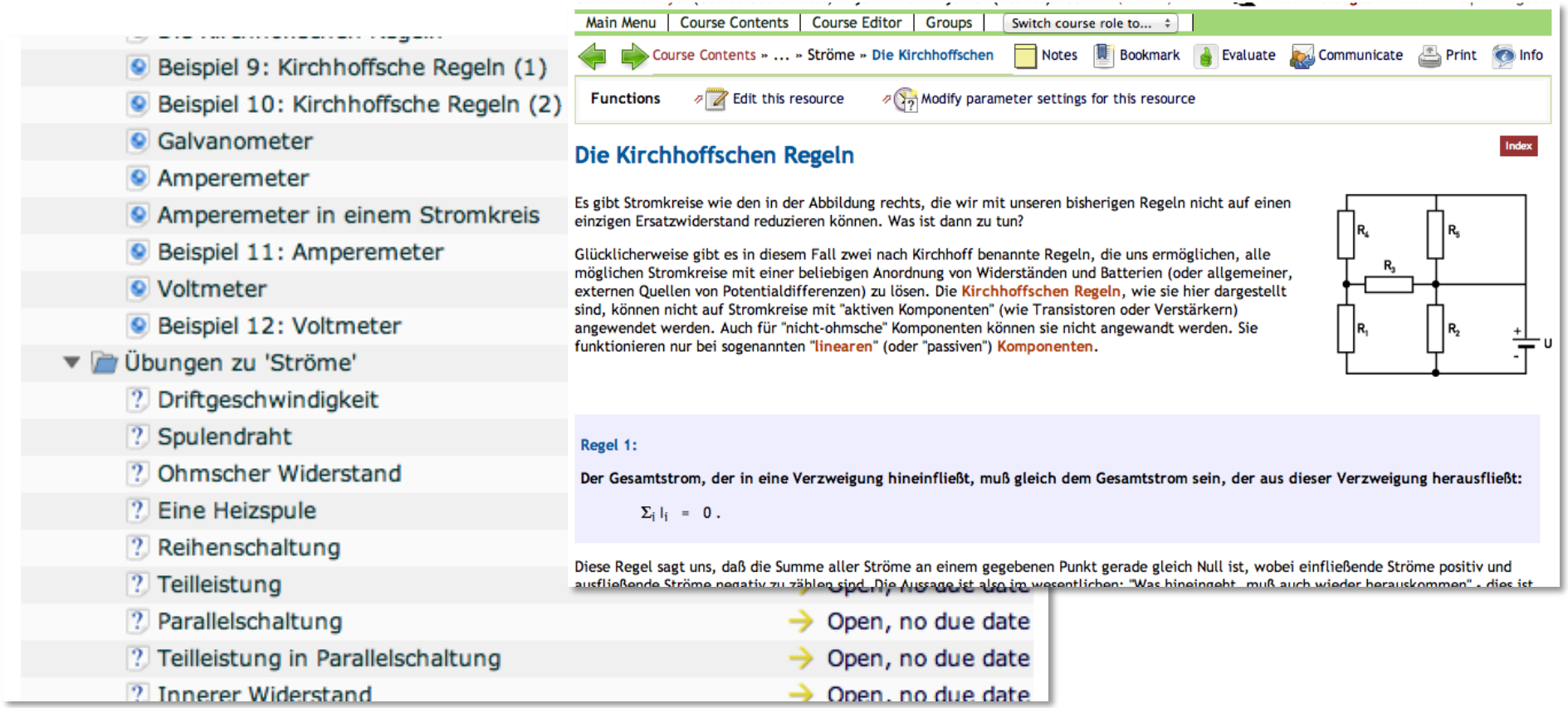
- Im Moment hauptsächlich in Nordamerika
- Einige Installationen in Deutschland

Deutschland?

- Einwände in Deutschland
  - Verschulung der Lehre
  - „Deutsche Professoren teilen lieber ihre Zahnbürste als ihre Vorlesungsskripte“

Universität Frankfurt

- Universität Frankfurt
- Physik für Pharmazeuten, Biologen, Physiker
- Online Text und Hausübungen



Niedersächsische Hochschulen

- Ostfalia
- Hannover
- Lübeck

Medizinische Hochschule

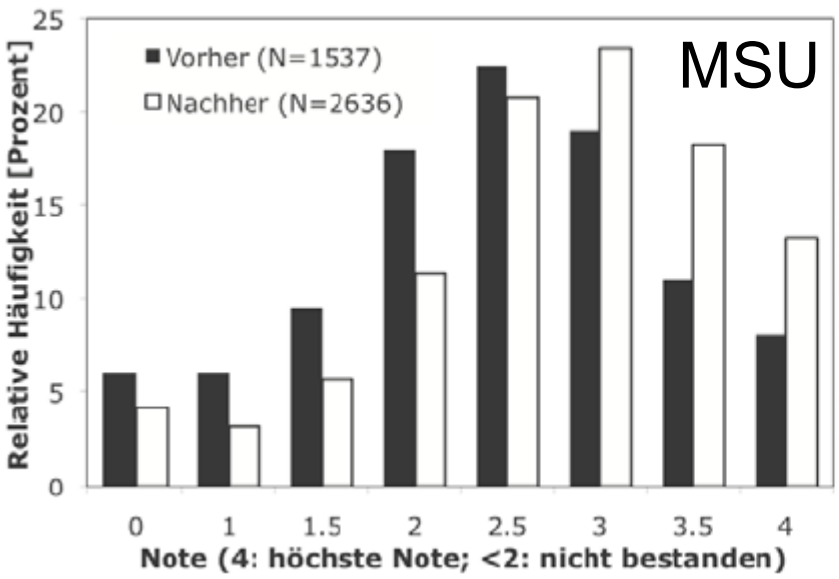
- Medizinische Hochschule Hannover
  - Übungsaufgaben, “Physik für Mediziner”

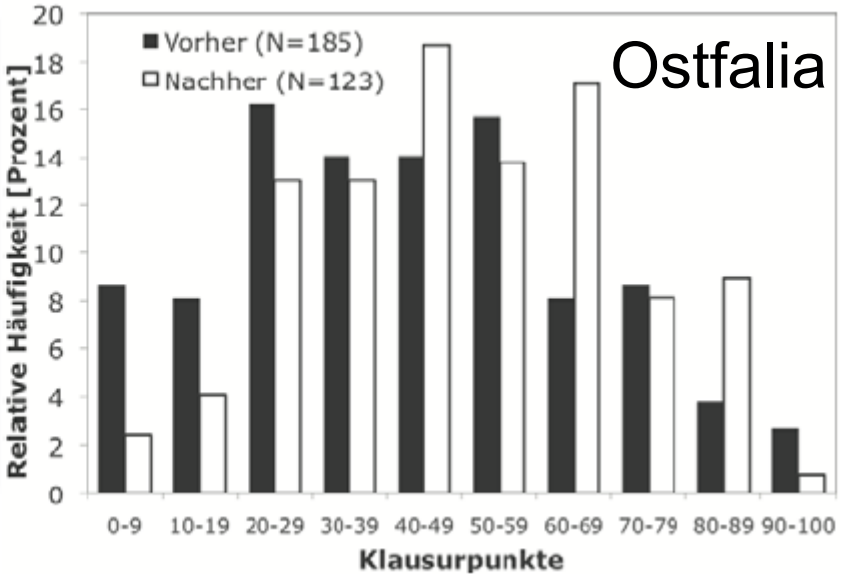
Karlsruhe

- Karlsruhe Institut für Technologie
  - wird gerade eingerichtet

Vergleichsstudien

- Effizienz in Deutschland?





Vergleichsstudien

- Gerd Kortemeyer and Peter Riegler, *Large-Scale E-Assessments, Prüfungsvor- und -nachbereitung: Erfahrungen aus den USA und aus Deutschland, Zeitschrift für E-Learning, Volume 5, Issue 1, (2010)*
- Peter Riegler and Gerd Kortemeyer, *Praxisbericht: Mehrwert freier elektronischer Übungsaufgaben in MINT-Fächern, Zeitschrift für E-Learning, Volume 5, Issue 3, (2010)*
- Peter Riegler and Gerd Kortemeyer, *Gender Differences in Computer Aided Assessments, Wismarer Frege Reihe (Wismar Frege Series), Heft 03/2010, 23-28 (2010)*
- Susanne Bellmer, Gerd Kortemeyer, and Peter Riegler, *Computerbewertete Übungen in mathematischen, technischen und naturwissenschaftlichen Grundlagenfächern, in Auf dem Weg zu exzellentem E-Learning - Kooperation und Vernetzung der Hochschullehre in Niedersachsen (Hans-Jürgen Appelrath and Leonore Schulze (ed.)), Waxmann Verlag (Münster, New York, München, Berlin), ISBN 978-3-8309-2122-6 (2009)*

Fazit: Kein signifikanter Unterschied im Technologieeinsatz zwischen amerikanischen und deutschen Studierenden

Vielen Dank!

- Gerd Kortemeyer
- Currently on sabbatical:
  Pritchard Group (RELATE), MIT Physics
- kortemey@msu.edu