Force Concept Inventory (FCI) deployed in Blackboard:

Notice that we will call FCI a **SURVEY** to all our students. We do NOT want the students to know that this is called Force Concept Inventory, and we do NOT want them to think this is a test.

Here is some important info about FCI:



Version 0



downloaded from PhysPort.org

Developed by: David Hestenes, Malcolm Wells, Gregg Swackhamer, Ibrahim Halloun, Richard Hake, and Eugene Mosca

Format: Pre/post, Multiple-choice

Duration: 30 minutes

Focus: Mechanics Content Knowledge (Kinematics, Forces)

Level: Intro College, High School

Security Warning!

Students may not have unsupervised access to this assessment instrument! It takes many years to create and validate reliable assessment instruments. If students can access and study from them, these instruments lose their validity.

Please do not:

We are aware of that.

- · allow students to keep copies of this instrument
- . post this instrument on a website without security to prevent copying, downloading or sharing
- · share this instrument with anyone who hasn't agreed to these guidelines

How to give the test

- . Give it as both a pre- and post-test. This measures student learning.
 - Give the pre-test before you cover relevant course material.
 - · Give the post-test at the end of the term.
- · Use the whole test, with the original wording and question order. This makes comparisons with other classes meaningful.
- Make the test required, and give credit for completing the test (but not correctness). This ensures maximum participation from your students.
- Tell your students that the test is designed to evaluate the course (not them), and that knowing how they think will help
 you teach better. Tell them that correctness will not affect their grades (only participation). This helps alleviate student
 anxiety.
- · Refer to the test by a generic title like "Mechanics Survey" to prevent students from looking up the answers.
- · For more details, read the PhysPort Guides on implementation:
 - PhysPort FCI implementation guide (www.physport.org/implementation/FCI)
 - PhysPort Expert Recommendation on Best Practices for Administering Concept Inventories (www.physport.org/expert/AdministeringConceptInventories/)

How to score the test

- . Each student's score is their percentage correct out of 30 questions.
- See the PhysPort Expert Recommendation on Best Practices for Administering Concept Inventories for instructions on calculating normalized gain and effect size (www.physport.org/expert/AdministeringConcept/nventories/)
- Use the PhysPort Assessment Data Explorer for analysis and visualization of your students' responses (www.physport.org/explore/FCI)

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In summary, you will need to take the following steps to fully deploy the surveys in Bb:

- 1) Import the two survey files (MechanicsSurvey_PRE.zip, MechanicsSurvey_POST.zip) in Bb.
- 2) Create two tests in Bb, one for each file imported: this is because the surveys are deployed as tests in Bb (but the students don't see them as tests).
- 3) Set up the test options: choose timer, dates, force completion, etc.

1) IMPORT SURVEY FILES IN Bb

- i. Go to the course that you wish to import course material into
- ii. Go to the **Course Management** area in the Course Menu (left panel, at the bottom)
- iii. Click on Packages and Utilities
- iv. Click on Import Package/View Logs
- v. Click on the button Import Package
- vi. Click on **Browse My Computer** and locate the ZIP files. Do it only one at a time. The two files you want are: MechanicsSurvey_PRE.zip, MechanicsSurvey_POST.zip
- vii. Click/select **Tests**, **Surveys and Pools** (you don't need the rest)
- viii. Click on **Submit** to begin the process. You will receive an email when it is complete. It takes about a minute or so.

2) CREATE LINKS TO TESTS

- i. Click on **Content**
- ii. Click on Assessments-> Test
- iii. Select the Test from the **Add an Existing Test** list: first you will select the file MechanicsSurvey_PRE.zip, for example.
- iv. Click on **Submit**

3) SET UP TEST OPTIONS

This is the text we show students inside the Test Options (you will need to copy and paste this):

Dear student:

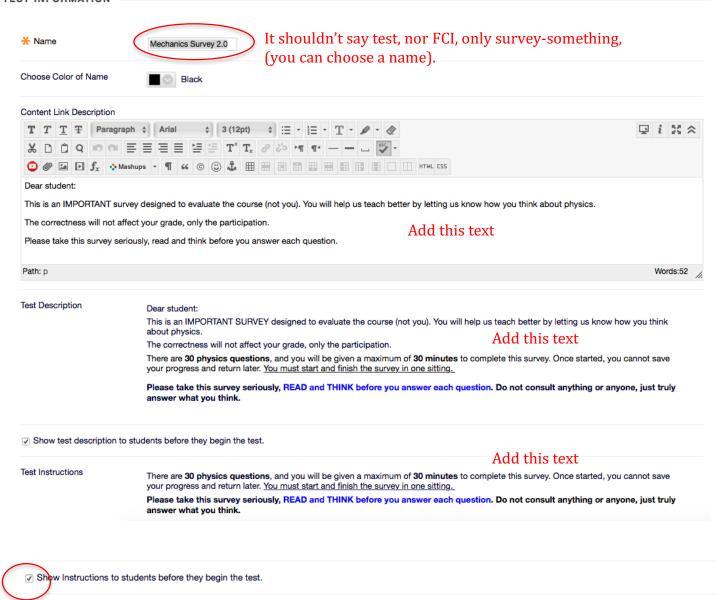
This is an IMPORTANT SURVEY designed to evaluate the course (not you). You will help us teach better by letting us know how you think about physics.

The correctness will not affect your grade, only the participation.

There are **30 physics questions**, and you will be given a maximum of **30 minutes** to complete this survey. Once started, you cannot save your progress and return later. You must start and finish the survey in one sitting.

Please take this survey seriously, READ and THINK before you answer each question. Do not consult anything or anyone, just truly answer what you think.

The remaining options should be selected as shown below (please pay attention to details if you can):



Open test in new window

Yes
 No

TEST AVAILABILITY
Make the link available Yes No
Add a new announcement for Yes No this test
Multiple Attempts Allow Unlimited Attempts Number of Attempts
Score attempts using Last Graded Attempt
✓ Force Completion Very important Once started, this test must be completed in one sitting.
Set expected completion time. Selecting this option also records completion time for this test. Students will see the timer option before they begin the test. 31 Minutes 31 min for the PRE (it has 1 additional question about the discipline of interest) 30 min for the POST both tests have 30 physics questions OFF: The user is given the option to continue after time expires. ON: Test will save and submit automatically when time expires.
For the PRE: choose a 2-week period at the start of the semester (should not start much after the 1st week of classes)
Display Until 09/21/2017 12:30 AM For the POST: choose a 2-week period at the end of the semester (last day should be last day of class, not after).
□ Password Require a password to access this test.
TEST AVAILABILITY EXCEPTIONS
Click Add User or Group to search for course users and groups to add to the exception list. Timer and force completion must be enabled in the previous test availability step to enable those settings for exceptions. If you choose to use groups, you must make the group unavailable if you do not want students to see group members. Click Remove all Exceptions to delete all exceptions for the test.

Add User or Group

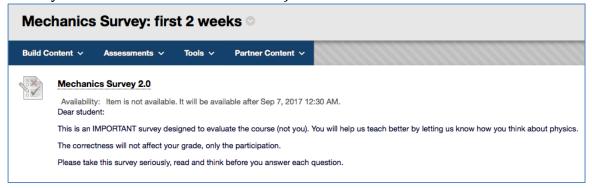
Remember you will need to follow the same steps for each file (MechanicsSurvey_PRE.zip, MechanicsSurvey_POST.zip) separately.

This way, the surveys will be displayed inside **Content** in the Bb course menu. The surveys themselves will actually only be available inside the dates you've selected in Test Options. Outside the selected time period, students will not be able to see the surveys.

We are trying to increase the participation in the FCI assessment. Last year we offered FCI (the survey...) for extra credit. But this time, I'm offering as a "mandatory" activity, still worth the same 1 point it was worth before as extra credit. I will emphasize to the class, in a speech, that only those who complete PRE+POST survey will get the 1 point...

This is a snippet of my course outline:

When students click on the survey link, this is what they see (not available yet because I'm doing this a few days before the start of the semester):



This January 2018 I attended a talk at the AAPT meeting in San Diego about how instructor practices can change student participation in assessments. They were investigating which of these were more effective in increasing student participation for online assessment, versus pen-and-paper assessment: 1) do nothing or little; 2) multiple e-mail reminders; 3) multiple in-class announcements; 4) credit for participation in the assessment. Only when 2+3+4 were adopted by instructors the participation approached the same as in pen-and-paper assessments. So please:

- Send multiple e-mail reminders
- Do multiple in-class announcements
- Offer credit for participation in the assessment