


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:

Force Concept Inventory (FCI)

Version 95

**PhysPort**
Supporting physics teaching
with research-based resources

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:

- 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

We are aware of that.

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/AdministeringConceptInventories/)
- Use the **PhysPort Assessment Data Explorer** for analysis and visualization of your students' responses (www.physport.org/explore/FCI/)

FCI © 1995 American Modeling Teachers Association. PhysPort cover sheet ©2014 PhysPort.org

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):

TEST INFORMATION

* Name

Mechanics Survey 2.0

It shouldn't say test, nor FCI, only survey-something, (you can choose a name).

Choose Color of Name



Black

Content Link Description

Rich text editor toolbar with options: Paragraph, Arial, 3 (12pt), Bold, Italic, Underline, Text Color, Background Color, Bulleted List, Numbered List, Indent, Outdent, Link, Unlink, Image, Video, Audio, Table, Grid, HTML, CSS.

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.

Please take this survey seriously, read and think before you answer each question.

Path: p Words:52

Test Description

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.

Add this text

☒ Show test description to students before they begin the test.

Add this text

Test Instructions

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.

☒ Show Instructions to students before they begin the test.

Open test in new window



Yes



No

TEST AVAILABILITY

Make the link available

☒ Yes ☐ No

Add a new announcement for this test

☐ Yes ☒ No

☐ Multiple Attempts

☐ Allow Unlimited Attempts

☐ Number of Attempts

Score attempts using

Last Graded Attempt

☒ Force Completion

Once started, this test must be completed in one sitting.

Very important

☒ Set Timer

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

Auto-Submit

☐ OFF ☒ ON

OFF: The user is given the option to continue after time expires.

ON: Test will save and submit automatically when time expires.

☒ Display After

09/07/2017



12:30 AM



Enter dates as mm/dd/yyyy. Time may be entered in any increment.

☒ Display Until

09/21/2017



12:30 AM



Enter dates as mm/dd/yyyy. Time may be entered in any increment.

For the PRE: choose a 2-week period at the start of the semester (should not start much after the 1st week of classes)

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

DUE DATE

Set the date the assessment is due. Optionally, do not allow students to take a test once the due date has passed.

Submissions are accepted after this date, but are marked **Late**.

☒ Due Date

Enter dates as mm/dd/yyyy. Time may be entered in any increment.

☒ Do not allow students to start the Test if the due date has passed.

Students will be unable to start the Test if this option is selected.

SELF-ASSESSMENT OPTIONS

If this test is a self-assessment, choose to include or hide the scores in the Grade Center. NOTE: If an instructor decides to include the test in the Grade Center after it was hidden, all prior attempts will be deleted.

☒ Include this Test in Grade Center score calculations

Grade Center items excluded from summary calculations are also excluded from weighting. Also note that if some weighted items are included in calculations and other weighted items are not, grade weight calculations will be skewed.

☐ Hide results for this test completely from the instructor and the Grade Center

If this option is selected, the instructor will not be able to see any student grades, view answers, aggregate results, or download result details. To protect student privacy, this choice cannot be reversed later without deleting all attempts.

SHOW TEST RESULTS AND FEEDBACK TO STUDENTS

Test results and feedback are available to students after they complete a test. Set up to two rules to show results and feedback. Rules occur based on the events selected. Each rule specifies when and what to show students; such as scores, answers, and feedback for each question.

When ⓘ	Score per Question ⓘ	Answers ⓘ	Feedback ⓘ	Show Incorrect Questions ⓘ
After Submission ▾	<input checked="" type="checkbox"/>	<input type="checkbox"/> All Answers <input type="checkbox"/> Correct <input type="checkbox"/> Submitted	<input type="checkbox"/>	<input type="checkbox"/>
----Choose---- ▾	<input type="checkbox"/>	<input type="checkbox"/> All Answers <input type="checkbox"/> Correct <input type="checkbox"/> Submitted	<input type="checkbox"/>	<input type="checkbox"/>

TEST PRESENTATION

☒ All at Once

Present the entire test on one screen.

☐ One at a Time

Present one question at a time.

☐ Prohibit Backtracking

Prevent changing the answer to a question that has already been submitted.

☐ Randomize Questions

Randomize questions for each test attempt.

Click **Submit** to edit options for this test. Click **Cancel** to quit.

Cancel

Submit

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:


HOW TO COMPUTE YOUR FINAL GRADE:

Homework (total of 9 – 1).....	8%
VPython coding exercises (8).....	8%
Assessment survey (mandatory).....	0.5% (2 x)
Each test (mandatory).....	21% (4 x)
Final exam (optional).....	21% (when taken, the final exam will replace the lowest of the 4 tests)
Extra credit (optional).....	0.5% (4 x)

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):

Mechanics Survey: first 2 weeks ▾

Build Content ▾ Assessments ▾ Tools ▾ Partner Content ▾

**Mechanics Survey 2.0**
Availability: Item is not available. It will be available after Sep 7, 2017 12:30 AM.
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.
Please take this survey seriously, read and think before you answer each question.

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](#)