



Please indicate if, and how frequently, the following occur in your course

	Almost always	Sometimes	Rarely	NA
Students work in pairs or groups	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students write to learn	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students design approaches to solve problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students generate hypotheses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students solve mathematical problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students solve word problems	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students analyze data	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students interpret graphs or tables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students produce graphs or tables	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students learn material without any lecture on it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are asked about their background knowledge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are asked about their attitudes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are asked to set learning goals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are helped to realize their preconceptions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are given clear criteria by which they will be evaluated	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students practice skills and examine knowledge in a “safe” setting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are given feedback on their learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students give feedback to the instructor on the instruction	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students connect course material to “the real world”	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students are asked to reflect on their learning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Please indicate if, and how frequently, the following occur in your assessment of students (Homework, labs, quizzes, exams, projects, ...)**

	% of exam	Almost always	Sometimes	Rarely
Exams include multiple choice questions	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include matching questions	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include “Fill in the blank” questions	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include mathematical problems	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include word problems	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include definitions	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include analysis of data	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include interpretation of graphs or tables	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams include production of graphs or tables	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams ask students to generate hypotheses	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams ask students to design an approach to a question	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exams ask students to only set up a solution, not solve	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a single homework set for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a single lab report for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a single quiz for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a single project for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a portion of an exam for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Students submit a single exam for the entire group	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Seven Principles of Learning<sup>5</sup>

- 1) Learning with understanding is facilitated when new and existing knowledge are structured around the major concepts and principles of the discipline.
  
- 2) Learners use what they already know to construct knowledge.
  
- 3) Learning is facilitated through the use of metacognitive strategies that identify, monitor, and regulate cognitive processes.
  
- 4) Learners have different strategies, approaches, patterns of strengths in learning, and learning styles that that are a function of the interaction between their heredity and their prior experiences.
  
- 5) Learners' motivation to learn, and their sense of self, affect what is learned, how it is learned, how much is learned, and how much effort is put into the learning process.
  
- 6) The practice and activities in which people engage while learning shape what is learned.
  
- 7) Learning is enhanced through socially supported interactions.

### Looking at the Scope of Learning

Area of application Type of learning	<b>In the Discipline</b>	<b>Learning about Learning</b>	<b>In Life</b>
	Content		Content
	Skills	Skills	Skills
	Attitudes	Attitudes	Attitudes
	Applications		Applications
	Values	Values	Values

## What might you want to measure?

- o What background knowledge about the subject students bring to the course
- o What skills students bring to the course
- o What students' attitudes and perceptions are about the subject and the course
- o What misconceptions students bring in the door
  
- o What information students have acquired from the course readings
- o What information students have acquired from lectures
- o What information students have acquired from research
- o What information students have not acquired
- o What mis-information students have acquired
  
- o How well students understand the important concepts of the course material
- o How well students relate new material to their existing knowledge
- o How well students pose a hypothesis
- o How well students design a method to test a hypothesis
- o How well students analyze data
- o How well students can translate words into mathematics
- o How well students can pick out the critical information from a reading
- o How well students apply the ideas from the course to new situations
- o How well students communicate their knowledge verbally
- o How well students communicate their knowledge orally
- o How well students work with others
- o .

## Why do you want to know?

- To understand what students have or have not learned up to this time
- To help students to understand what they have and have not learned
- To make adjustments in your teaching
- To make adjustments in the course
- To meet external mandates
- To give a grade
- Basic curiosity
- .
- .

## Finding out $\neq$ grading

**Plan for regular feedback for students on their learning – both graded and ungraded**

**Be sure that you are transparent with students about the learning goals you have for them.**

**Tell students about the various ways and reasons for assessing their learning.**

**Assess and give feedback to the students in ways that help them learn better.**

- Set up areas for mastery that are required, but not graded (unless not mastered) – monitor which areas are quickly completed and which take more time
- Give students questions/problems that they work on in pairs or groups in class – have one group present their answer, and let other groups critique [this gives you a chance to see how the students approach the question, and lets you assess the level of understanding, both by the presentation and the questions/comments from other groups]
- Give students a chance to practice using new skills and knowledge in a way that provides feedback and motivation, but does not penalize them for needing more than one try to get it right. One way to do this is to have them work towards mastery – they get credit when they achieve a certain desired level of performance, but they get multiple tries to achieve this.
- Use on-line questions and quizzes that give immediate feedback to provide students a chance to practice working with disciplinary language, constructs, and problems in a non-threatening setting
- Ask students to anonymously submit a question they had on the assigned reading or homework, or alternatively on the material from that day's class (a 3x5 card works well for this) – then answer a couple of these questions in class [this lets you determine where students are confused, and provides a forum in which to address the confusion]
- Give assignments where students provide feedback to each other (preferably with a rubric you provide), and then ask each student or group of students to identify the major weakness they found
- Have students (in groups) develop a rubric for the assignment. To produce a good rubric, they must understand the assignment and the underlying material
- Assess the same material in different ways, to learn if the way you are measuring is valid
-

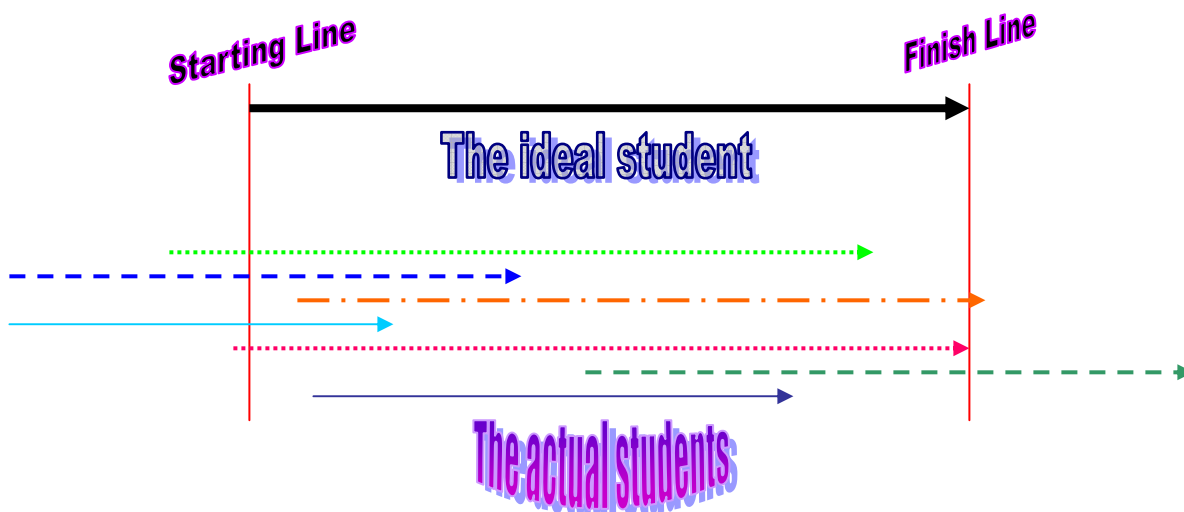
## Make Students partners in Learning and Assessing

- Explain to students what types of teaching approaches will be used, and why - what types of learning these approaches support
  - Explain what types of learning will be assessed in this course
  - Explain how this learning will be measured – rubrics are very helpful for students in understanding the desired outcomes, and what constitutes high achievement
  - Help students to determine their preferred learning style, and in which areas they need to improve their skills
  - Teach students to provide feedback to each other, and give structured opportunities for this
  - Model good practice with feedback - ask for feedback on your teaching, and talk to students about how you use it
  - Ask students what approaches best allow them to demonstrate their learning
- 

### So, what do you do??

- Decide what you'd like to measure
  - Decide how much time, effort you will commit to this
  - Find, borrow, adapt, or develop approaches
  - Assemble your instrument/method
  - Go through it yourself – refine
  - Try it with your students – refine again or discard
- 

**Warning : students may not learn at the instructors pace**



# Remember Blooms Taxonomy

<b>Competence</b>	<b>Skills Demonstrated</b>
<b>Acquisition</b>	observation and recall of information knowledge of dates, events, places, major ideas mastery of subject matter testing recall and recognition <i>Question Cues:</i> list, define, describe, identify, show, label, collect, choose, match, omit, examine, tabulate, quote, name, who, when, where, etc.
<b>Comprehension</b>	Understanding information, grasping meaning Translating knowledge into new context Interpreting facts, comparing, contrasting Ordering, grouping, inferring causes Predicting consequences <i>Question Cues:</i> summarize, describe, interpret, contrast, predict, associate, distinguish, estimate, differentiate, discuss, extend
<b>Application</b>	Using information Using methods, concepts, theories in new situations Solving problems using required skills or knowledge <i>Questions Cues:</i> apply, demonstrate, calculate, complete, illustrate, examine solve, show, modify, relate, change, classify, experiment, discover
<b>Analysis</b>	Seeing patterns Organizing parts Recognizing hidden meanings Identifying of components <i>Question Cues:</i> analyze, separate, order, explain, connect, classify, arrange, divide, compare, select, explain, infer
<b>Synthesis</b>	Using old ideas to create new ones Generalizing from given facts Relating knowledge from several areas Predicting, drawing conclusions <i>Question Cues:</i> combine, integrate, modify, rearrange, substitute, plan, create design, invent, what if?, compose, formulate, generalize, restate
<b>Evaluation</b>	Comparing and discriminating between ideas Assessing value of theories, presentations Making choices based on reasoned argument Verifying value of evidence Recognizing subjectivity <i>Question Cues:</i> assess, decide, rank, grade, test, measure, recommend, convince select, judge, explain, discriminate, support, conclude

# Suggestions for Effective Assessment of Learning

## 1) Match assessment approaches to the learning outcome being measured

### **Acquisition of facts**

Multiple choice  
Fill in the blanks  
Matching

### **Understanding of graphs and charts**

Multiple choice  
Fill in the blanks, Matching  
Short answer  
Create an appropriate graph or chart

### **Mathematical Problem solving**

Set up problem, draw diagram  
Full solution  
Full solution with explanations  
Analysis of a solved problem

### **Analysis of data or information**

Short answer  
Fill in the blanks, Matching  
Production of graphs or charts  
Full essay  
Write an analysis question

### **Word Problem solving**

Set up problem, draw diagram  
Full solution  
Full solution with explanations

### **Evaluation of ideas**

Short answer  
Full essay  
Multiple choice

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2. Match assessment approach to teaching approaches. Asking students to do something new on the exam does not measure what they have learned, but only what they knew before your course.

3. Assess what you have stressed in the course. You've indicated what is important by the time and effort you've given to topics and skills. Measure that.

4. Use easily understood language – if students misinterpret the question, you won't know what they have learned (this is particularly important for ESL students)

5. Have only 1 or 2 purposes for a question – multiple purposes make for convoluted questions that don't tell you which elements students do and do not know.

6. Decide what is most important and assess that. Don't assess other things because they are easier to measure.

7. Ask students for feedback on how you are measuring their learning. They know better than anyone else how they might best demonstrate their learning.

**Guide for feedback on “Are New SEC Regulations Required” paper**  
*Remember, the goal here is to help others improve their writing - be constructive*

1. Is the paper presented in a professional manner (typed, neat, stapled, etc)
2. Is the abstract informative, well structured, complete, and comprehensible?
3. Does the paper have a clear thesis? Is it presented early enough that the reader understands where the paper is going? Is the thesis pertinent and appropriate for this assignment?
4. Is the paper well structured? Does it contain a “roadmap” for the reader? Is it broken down into sections with appropriate headings? Is it visually easy to read?
5. Is the paper well structured thought wise? Is the thesis clear and well supported? Is there a logical flow to the topics/arguments? Are there abrupt transitions, or places where something seems to be missing? Does the conclusion follow from the arguments presented?
6. Are the arguments in the paper pertinent to the subject? Are they logical and supported with data and facts, and not just emotion or rhetoric? Are the key arguments made, or has some critical point been left out?
7. Are the language and the style of the paper appropriate to the task and the intended audience? Is the paper interesting to read, or is merely a recitation of facts? Does the vocabulary used enhance the presentation? Is there nuance, inference, or any subtlety to the arguments and the presentation?
8. In one or two sentences, give your overall assessment of this paper.

## Rubric for grading a research paper

	<b>Outstanding</b>	<b>Good</b>	<b>Fair</b>	<b>Unacceptable</b>
<b>Visual Presentation</b>	Cover page with relevant info, including descriptive title Section headings Good graphics, with appropriate citations Clean and professional looking	Cover page there Sections headings Graphics included Professional looking	Most relevant information present Some section headings, captions, or graphics used Looks like H.S. paper	Dirty or ragged looking Missing titles, captions, headings, name of author, ... Not professional
<b>Abstract</b>	Abstract is proper length. Highly informative, complete and easy to understand. Appropriate vocabulary is used Abstract makes you want to read the paper.	Abstract is proper length. Informative, complete and understandable. Appropriate vocabulary is used.	Abstract is proper length. Somewhat informative and understandable.	Abstract is not the proper length. Not very informative or understandable.
<b>Structure</b>	Thesis is clear, easy to find, and appropriate to the assignment. Thesis is supported by the rest of the paper. Paper contains a “roadmap” for the reader. There is a logical flow to the topics/arguments. Conclusion follows clearly from the arguments presented.	Thesis is clear and appropriate. Thesis fairly well supported Paper is fairly well organized Conclusion follows from the rest of the paper	Thesis is fairly clear Thesis sometimes supported Paper weakly organized Conclusion is acceptable	Thesis unclear and inappropriate. Thesis not supported Paper is not organized Conclusion doesn't follow from the rest of the paper
<b>Research</b>	The evidence comes from a wide variety of valid sources The bibliography is complete and reflects the appropriate sources The evidence used reflects multiple views	The evidence comes from many valid sources The bibliography is complete The evidence used reflects multiple views	The evidence comes mostly from valid sources The bibliography is missing some pieces	The evidence seldom comes from valid sources The bibliography is missing significant information
<b>Thinking</b>	Arguments are pertinent to the topic. Arguments are logical, and supported with evidence, not based on emotion or rhetoric. The key arguments have been made – no major points have been left out.	Arguments are pertinent to the topic. Arguments are fairly logical and reasonably supported. Most key arguments have been made.	Arguments sometime pertinent Arguments are sometime logical and supported. A few key arguments have been made.	Arguments not pertinent Arguments are seldom or never logical and supported. Almost no key arguments have been made.
<b>Interest factor</b>	Language and style of paper appropriate for intended audience Paper presents analysis and synthesis, and not just facts There is nuance, inference and subtlety to the paper. The main points are memorable. Readers were engaged, not bored.	Language and style of paper appropriate Paper presents some analysis and synthesis There is a little nuance, inference and subtlety Main points clear Reader is engaged	Language and style only fair Paper presents little analysis and synthesis Nuance, inference and subtlety lacking Main points made, but not memorable	Language and style poor Analysis and synthesis lacking Main points not well made, or not discernable

**Weekly feedback 1**

Date \_\_\_\_\_

Course \_\_\_\_\_

How much did you get  
out of this weeks class?

Very little

Some

A great deal

1

2

3

4

5

What was the most important idea, concept, or understanding you got out of this week's classes?

What was the most difficult or confusing thing in this week's classes?

What one question about the course material would you most like answered?

Any other feedback you'd like to give? Please write it on the back. Thank you!

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**Weekly Feedback 2**

Date \_\_\_\_\_

Course \_\_\_\_\_

Give one or two examples of specific things that the professor does that really help you learn *Fourier Analysis* (insert appropriate topic or some particular aspect of your course).

Give one or two examples of specific things that the professor does that make it more difficult for you to learn *Fourier Analysis* (insert appropriate topic or some particular aspect of your course).

Suggest one or two practical changes the professor could make that would improve your learning in this class

## Midcourse feedback

Course \_\_\_\_\_

How is the pace of the course for you?	Too slow 1	2	Fine 3	4	Too Fast 5
How is the difficulty of the material?	Too easy 1	2	Fine 3	4	Too Hard 5
Is the amount of material right?	Not enough 1	2	Fine 3	4	Too Much 5
Is the level of material right?	Too low 1	2	Fine 3	4	Too High 5
Do the lectures help you understand the material?	No 1	2	Some 3	4	A lot 5
Does the homework help you understand?	No 1	2	Some 3	4	A lot 5
Does the discussion help you understand?	No 1	2	Some 3	4	A lot 5
Does the book help you understand?	No 1	2	Some 3	4	A lot 5
Does the web material help you understand?	No 1	2	Some 3	4	A lot 5
Do you see connections between the course material and the broader world?	No 1	2	Some 3	4	A lot 5

What aspect of the course most helps you to learn?

What aspect of the course do you find most difficult?

Do you have any suggestions for things the course could include or emphasize to help you better learn?

**George Mason University -- Office of Institutional Research and Reporting  
Course Evaluation Form**

Course Title \_\_\_\_\_ Instructor's name \_\_\_\_\_

The university is trying out this new course evaluation form in a limited number of classes. It is hoped that this new form will allow students to give more extensive and valuable feedback. Please thoughtfully consider the following statements and indicate your level of agreement or disagreement .

	<b>Strongly Agree</b>			<b>Strongly Disagree</b>	
	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
<b>Course Organization and Planning</b>					
1) Course requirements were clearly stated in the syllabus	O	O	O	O	O
2) The course was well organized	O	O	O	O	O
<b>Communication and Faculty/Student Interaction</b>					
3) The instructor explained the material clearly	O	O	O	O	O
4) Comments and suggestions on returned material were helpful	O	O	O	O	O
5) The instructor showed respect for students	O	O	O	O	O
6) The instructor was available during office hours	O	O	O	O	O
<b>Assignments, Exams, and Grading</b>					
7) The instructor followed the stated course grading policy	O	O	O	O	O
8) The exams reflected what was covered in the course	O	O	O	O	O
9) The assignments (projects, papers, presentations, etc.) helped me learn the material	O	O	O	O	O
10) Readings helped me understand the course topic	O	O	O	O	O
11) Assignments and exams were returned promptly	O	O	O	O	O
<b>Course Delivery</b>					
12) The instructor covered the important aspects of the course as outlined in the syllabus.	O	O	O	O	O
13) The instructor made the class intellectually stimulating	O	O	O	O	O
14) The instructor encouraged the students to be actively involved in the material through discussion and other activities	O	O	O	O	O
<b>How would you rate the teaching of this course, and the course itself? Please do your best to separate your feelings about the course from the way it was taught.</b>					
15) My overall rating of the teaching	Excellent O	Good O	OK O	Fair O	Poor O
16) My overall rating of this course	Excellent O	Good O	OK O	Fair O	Poor O

<b>Student Information</b>	<b>Very High</b>		<b>Moderate</b>		<b>Very Low</b>	
	O	O	O	O	O	O
17) The amount of effort you put into the course						
18) The number of times you were absent from class	<b>8 or more</b> O	<b>6-7</b> O	<b>4-5</b> O	<b>2-3</b> O	<b>0-1</b> O	
19) The grade you expect in this class:	<b>A</b> O	<b>B</b> O	<b>C</b> O	<b>D</b> O	<b>F</b> O	
20) Your class level is:	<b>Fresh.</b> O	<b>Soph.</b> O	<b>Junior</b> O	<b>Senior</b> O	<b>Grad.</b> O	
21) Your overall GPA is:	<b>3.51-4</b> O	<b>3.01-3.5</b> O	<b>2.51-3</b> O	<b>2.01-2.5</b> O	<b>below 2.0</b> O	
22) This course is:	<b>Required</b> O	<b>Elective</b> O	<b>Gen Ed</b> O	<b>Other</b> O		

**On the back of this form, please answer the following questions:**

- 1) What aspects of the course and the way it was taught helped you to learn?
- 2) What aspects of the course and the way it was taught made learning difficult? What do you suggest should be modified for the next time the course is taught?

*Thank you for your input!*

## References

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