UG Student Workload Task Force Recommendations
2021 Nov 29

1. Review the organization of course materials.
   a. Simplify and organize the course Brightspace page. Avoid "bells and whistles".
   b. Prepare weekly task lists (examples at the end of this document).
   c. Establish a consistent and predictable course schedule, e.g., homework is assigned every Monday and is due every Friday.
   d. Be aware of information overload, e.g., excessive emails, posts in different locations, etc.

2. Estimate the course objective workload.
   a. An example Excel spreadsheet is provided.
   b. The University states that 2 hrs/wk/cr of work outside of class is common. ME faculty expectations are 2 – 3 hrs/wk/cr of work outside of class.
   c. One method for estimating the time to complete a homework problem:
      i. Divide the time of an exam by the number of homework-style problems on that exam. Multiply this time-per-problem by a factor of two since in homework, this is the first time a student will have seen this type of problem. For example, two homework-style exam problems on a 60-minute exam = 30 min/problem. Thus, each homework problem will take approximately 2*30 min = 60 min.

3. Minimize loss-of-confidence incidents
   a. Set <u>unambiguous</u> course policies and grading algorithms and don't deviate from them.
      i. e.g., Provide students an Excel grading spreadsheet implementing the grading algorithm so they can estimate their own grade (example provided).
      ii. e.g., Don't allow late homework submissions for any reason. Instead, allow all students to drop a specified number of homeworks at the end of the semester. This policy is unambiguous and eliminates the need for deciding which incidents are excusable.
   b. Review lecture material, problem statements, and solutions for mistakes.
      i. e.g., Assign a particular TA to be responsible for reviewing that week's homework problem statements and solutions.
      ii. e.g., Have the TAs take the "final" version of an exam to catch errors and unclear statements, and check for timing.
   c. Respond to student questions and emails in a timely manner.
   d. Provide meaningful grading feedback in a timely manner.

4. Encourage student peer support.
   a. Encourage the formation of study groups.
   b. e.g., Create a Piazza page for Q&A.
   c. e.g., Allow group homework assignments.

5. Provide students a clear path to success.
   a. e.g., Provide grading rubrics – unambiguously state your expectations.
   b. e.g., Provide practice exams.
   c. e.g., Provide examples of good lab reports, project reports, etc.
   d. e.g., Encourage students to seek help early.
      i. Words and attitudes matter – be kind and supportive.
      ii. Be accessible. Hold office hours in "neutral" territory, e.g., tutorial rooms, UG lab space, UG student lounge, at well-defined times.
      iii. Advertise Supplementary Instruction sessions.

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6. Minimize tedious and little-value-added work.
   a. e.g., Provide partially-prepared notes prior to lecture (on Brightspace, for example).
   b. e.g., Allow the use of symbolic computation and numerical calculation software on homework assignments.
   c. Review the course content to determine if it's consistent with the learning objectives and the expectations of the modern-day workforce. Keep in mind that approximately 75% of our undergraduates go directly into BS-level positions after graduation (https://engineering.purdue.edu/ME/Undergraduate/IndustryPlacement).

7. Provide periodic breaks in workload during the semester.
   a. e.g., Provide in-class review sessions before exams.
   b. e.g., Don't assign homework during university breaks.
   c. e.g., Avoid assignments due during exam weeks, including homework and lab assignments.

8. Assess student performance using more low-stakes assessments instead of fewer high-stakes assessments.
   a. e.g., More quizzes and fewer exams (can be difficult to do due to limited class time).
   b. e.g., Provide partial credit and allow for propagation of error. Minimize all-or-nothing, multiple-choice problems.

9. Consider using methods for improving student intrinsic motivation.
   a. e.g., The Attention, Relevance, Confidence, and Satisfaction (ARCS) model (summary at the end of this document).

10. Coordinate exam timing between ME courses taken during the same semester.
    a. Coordinate at the School level through Lauren Adu, our Schedule Deputy.
    b. e.g., In Semester 5, students following the ME Program map would be enrolled in ME 36500, ME 32300, and ME 30800. Attempt to schedule these exams in different weeks. For example, if Lauren sees requests for ME 32300 and ME 30800 exams in the same week, she would contact the supervising instructors, alert them to the schedule overlap, and ask if there is flexibility with the dates.

11. Course supervisors should review these best practices at the start of each semester.

Subject: Fall 2020 ME 35400-ALL LEC - Merge > Welcome to Week 6
Date: Monday, September 28, 2020 at 12:54:26 PM Eastern Daylight Time
From: Beth Hess
To: Beth Hess, David Cappelleri, Jitesh Panchal

Hello all,

Here's your to-do list for Week 6 in ME 35400.

Continue to keep pace with the course schedule by watching the lecture videos and associated examples.

The deadline for **Homework 5** has been extended because many of you have multiple midterms in the next few days. Homework 5 is now due on Gradescope by 11:59 pm on Sunday, October 4.

Topic 3 discussions begin this week. Please see the topic that was posted in Week 5 in Brightspace.

Project 1 will be available on Brightspace shortly. The formal report for Project 1 will be due Monday, October 26 and intermediate deliverables will be due between now and then.

Stay safe and please let us know if you have any questions.

Prof. Panchal, Prof. Cappelleri, and Dr. Hess

ME30900 (Sp21) – Checklist
Week 07: We, Mar 03 – Tu, Mar 09

We're now at the half way point in the semester. Now is a good time to review your study habits and performance in the course and make mid-course corrections, if needed.

This week we start by spending an additional lecture on the Linear Momentum Equation for accelerating coordinate systems. It's an important topic and, thus, deserves extra emphasis. The rest of the week focuses on dimensional analysis. Dimensional analysis is a powerful tool and, fortunately, easy to apply once the parameters that are significant to the system are identified. The hard part is identifying the significant parameters. Dimensional analysis is used to efficiently present data, simplify experimental studies, and perform scale-model testing. It's worthwhile to mention that dimensional analysis can be applied to fields other than fluid mechanics.

✓	**Task**
	We, Mar 03: Review homework solutions and examine where mistakes may have been made
	We, Mar 03: Attend TA help hours/contact instructors to resolve homework difficulties
	We, Mar 03: Study in preparation for Quiz 06
	Read textbook: pp. 111 – 117
	Watch online video lecture: Linear Momentum for Non-Inertial FORs (lecture notes)
	If needed, read Wassgren notes: Linear Momentum for Non-Inertial FORs
	We, Mar 03: Participate in lecture
	Review/practice online Linear Momentum for Non-Inertial FORs
	Th, Mar 04: Take Quiz 06
	Fr, Mar 05: Review quiz solutions and examine where mistakes may have been made
	Read textbook: pp. 246 – 254
	Watch online video lecture: Dimensional Analysis - Introduction (lecture notes); Buckingham-Pi Theorem; Method of Repeating Variables (lecture notes)
	If needed, read Wassgren notes: Introduction; Buckingham-Pi Thm and Method of Repeating Variables
	Fr, Mar 05: Participate in lecture
	Review/practice online Dimensional Analysis
	Read textbook: pp. 256 - 267
	Watch online video lecture: Dimensional Analysis (Similarity and Scaling) (lecture notes)
	If needed, read Wassgren notes: Dimensional Analysis (Similarity and Scaling)
	Mo, Mar 08: Participate in lecture
	Review/practice online Dimensional Analysis (Modeling and Similarity)
	Throughout the week: Work on Hmk 07
	Throughout the week, if needed: Attend TA help desk sessions, review Piazza posts, meet with instructor
	Tu, Mar 09, before 11:59 P.M.: Submit Hmk 07

Following is a brief summary of the elements to include in instructional design using the ARCS Model for motivation. For additional information, refer to Keller, J.M., 1984, "Development and use of the ARCS model of instructional design", *Journal of Instructional Development*, Vol. 10, Article 2.

Attention • Interesting or counter-intuitive facts • Humor • Demonstrations • Active participation	**Relevance** • Real world applications • Link to previous experience • Student control of their learning
Confidence • Clear path to success (guidelines, consistency, reasonable expectations) • Quality and timely feedback • Staged difficulty – opportunity for growth • Resources for help • Student control of their learning	**Satisfaction** • Applying knowledge outside of class • Positive experiences • External rewards: praise, grades • Immediate application of knowledge