**Supplementary Table 6: Codes for course revisions**

|  |  |  |
| --- | --- | --- |
| **Code name and individual code kappa** | **Description** | **Example quotes** |
| Adjust timing  (1.00) | Instructors describe a desire to change the length of time or proportion of time spent on various activities in future iterations of a course | “So there are too many factors they have to use to determine which mechanism. So I think, for the next year when I teach this class, maybe I can speed up the schedule with some chapters, and for this chapter I’ll spend more time.”  “It’s very difficult to time, to plan the timing. So if I did it again, I would somehow try to increase the portion spent on gravity and decrease the portion spent on this central program of a pulley and two blocks.” |
| Adjust content  (1.00) | Instructors describe a desire to add or subtract content/topics from future iterations of a course | “I would probably emphasize more of the basic chemistry… The point is, if I’m talking about enzymes, they should understand the protein structure. If I’m talking about membranes, they should know what a phospholipid is. You can understand the materials by reviewing the background of chemistry. So I’d probably emphasize that a bit more.”  “Yeah, so as I mentioned earlier, I am writing my own textbook, and so this whole section about reaction rates, I am approaching it completely differently, and I’m focusing on ozone. So, we are going to be doing ozone in this class, but in this textbook, it comes after we’ve talked about these generic things about reaction rates, and I totally believe that’s exactly wrong. Let’s talk about a real phenomenon, and ozone is not that complicated, and then you can talk about reaction rates related to collisions of oxygen molecules and the interaction with light, and then I can genericize it, as I am going to do next year.” |
| Teaching approach: optimize visualizations  (1.00) | Instructors describe a desire to add, change, or improve their usage of animations, demonstrations, or videos in future iterations of a course | “I might try doing some different demonstrations, maybe demonstrate some of the concepts. Some of the things you talk about are somewhat dry, so it’s hard to bring it out and show how it works, all of the writing of the information that they don’t really picture in their mind what’s going on.”  “So I’m hoping I can use those resources to have them at least view either the structural tutorials or the interactive animations for each topic and then do the critical thinking questions.” |
| Teaching approach: optimize in-class assessment  (1.00) | Instructors describe a desire to add, change, or improve methods of assessing students during class time in the future | “I think what I will definitely do next time is, you know, make sure I have enough time to do some of the in-class assessments and the little projects, and maybe incorporate a little bit more of the think-pair-share approach for some of the questions.”  “Then open up to Google moderated questions for more free-posed questions in the back half of the time frame. I’ve got to try that next time.” |
| Teaching approach: optimize discussion  (1.00) | Instructors describe a desire to add, change, or improve in-class discussion in future iterations of a course | “I guess the short answers is I would probably try to improve some of the discussion questions.”  “I think that if I were to plan and think through things more carefully, there are ways that I can make it more interactive and get discussion going more frequently.” |
| Teaching approach: optimize pre-class activities  (1.00) | Instructors describe a desire to add, change, or improve prior-to-class activities in future iterations of a course | “I think what I’d like to try is to have them do a little bit more outside work… I’d like to try more of the JiTT approach where they essentially read the material before class and I am able to assess where they stand with the information. So if they understand something pretty well, then there is no reason for me to go in.”  “I wish I had pushed the reading more and they would come to class with a little more preparation. We could have gone a little further into the material." |
| Teaching approach: optimize clicker questions  (1.00) | Instructors describe a desire to add, change, or improve clicker questions or clicker usage in future iterations of a course | “I would try to do more clicker questions to lead to each topic for explanation… if my clicker questions show that they have no clue, I will spend more time to explain that.”  “I’m going to take a two question approach, but I’m going to do it a little bit different. I’m going to have a multiple choice question in which I give them a piece of code and then say, “What does this code do? A, B, C, or D?” and then I tell them to discuss that, and then I’m going to follow that up with a second question that will not be a multiple choice question, but instead a question asking them to do the same thing.” |
| Teaching approach: restructure or reorder activities  (1.00) | Instructors describe a desire to reorder or restructure existing activities in future iterations of a course | “I would probably skip the worksheet and give it to them as a homework. I felt that starting out with a worksheet was good in theory, they found it as hard as I hoped they would. I had hoped they would find it hard, but they found it really hard. So I probably would not have led in with that.”  “The worksheet that we did in the middle of the week, I felt was taking them a little bit too long in class, and so I’m considering having us do it out of class, and then it’ll keep maybe more of the flow going when we’re in class. Because some of them, when they finish, they just sat around and didn’t have much to do, and I think got a little bit bored while waiting for others to finish.” |
| Change learning goals  (1.00) | Instructors describe changes in their learning goals, both at the present and in the future | “I’ll revise it, I’ll do major revisions mid-semester. Based on mid-semester feedback I did major revisions, I cut a whole bunch of material, trimmed out chapters, because I felt that there was too much material, so I cut, like focused it. I’ll do it sort of mid-course, but not on like a daily basis.” |