Course Development Agreement

Course Specifications

This section represents a good faith estimate by the instructor, University, and Coursera.

Early planning is integral to designing and delivering a successful course that provides a high-quality learning experience for students and also accurately reflects the reputation of our partner institutions. To this end, we encourage our partners to explore the functionalities of our platform through the Coursera Partners' Portal and use it as a springboard to develop the vision for their courses.

As part of this planning process, please describe the scope of your course as well as the types of lectures and assessments expected to be offered. It may be hard to decide on course content months in advance of the start date, which is entirely understandable. With this in mind, course plans may be changed along the way, provided the course remains similar in substance and spirit to what is outlined below.

Course Title

Experimentation for Process Improvement

Course Description (100-200 words)

Increase your store's sales, improve the purity of your company's products, or even perfect your favourite baking recipe.

We are constantly using experiments to tweak and find improvements in our work and personal lives. But are you doing it efficiently? Or are you changing one thing at a time and hoping for the best?

Better experiments save time and money. This course reveals how to plan the most efficient experiments, to quickly make multiple changes that lead to better outcomes.

In this course we will learn to use factorial experiments, fractional factorials and response surface methods. If this sounds intimidating, don't fear! We include a gentle introduction to basic statistical concepts, where required, throughout the course.

By the end of this course you will be able to design your own experimental program and interpret experimental data using simple tools, based on sound statistical principles.

Instructor(s)

Kevin Dunn is an assistant professor at McMaster University, in Hamilton, Canada. He has a Masters degree in Chemical Engineering from McMaster, and a BEng from the University of Cape Town.

Course Length (in weeks; length should represent the entirety of the course from the student's perspective, including any final assessments that are administered after the final lecture video)

6 weeks

Hours per Week (estimated student time commitment, including watching videos and completing assessments; e.g. 3-5 hours)

5 to 7 hours

Description of Course Content

How do you plan to deliver course content? If you plan on using lecture videos, what is the envisioned format - e.g. instructor talking directly into the camera; instructor facilitating a small-group discussion; guest lectures; PowerPoint slides with the instructor in a picture-in-picture frame; a mix of these? Will you be creating in-video quizzes? What resources, if any, will complement the course content - e.g. slides; freely available journal articles?

The course content will be delivered in a variety of formats, most commonly:

* Start of video will feature the instructor's face directly at the camera for the introduction and learning objectives.
* The lesson content will be delivered either as a blank page, or an existing slide (supplied to students) where annotations at added via stylus input on top of the notes.
* Occasional a cut made to picture-in-picture explanations
* In-video quizzes (e.g. multiple choice) are planned to retain student engagment.
* Direction to work on a problem, pause, and continue with the solution will also be done.

The resources accompanying the content can seen at:
http://learnche.mcmaster.ca/4C3/Design_and_analysis_of_experiments_(2014).
These include (a) full set of slides and (b) a chapter from the textbook that the author has written (freely available PDF)

Do you plan to have guest presenters in your lecture videos? A guest presenter is someone who is acting as the instructor and is playing a central role in delivering lecture content.

- ○ Yes (please note that each guest presenter should sign a Form of Agreement for Guest Presenters)
- ◉ No

Do you plan to have any other participants in your lecture videos? A participant is someone who is not playing a central role in delivering lecture content, but still appears in the lecture videos. Examples include teaching staff and students that make an appearance in lecture videos.

- ○ Yes (please note that each participant should sign a Form of Participation Release)
- ◉ No

Will you be recording lecture videos specifically for the Coursera audience, or will you be repurposing existing content? If you plan to use recordings of on-campus classroom lectures or port over videos from another platform, please explain whether (and how) you intend to edit these videos so that they are suitable for Coursera students. If you are using existing videos, please provide sample links.

Material for the Coursera audience will be specifically created from scratch. Short, concise videos, around 4 to 5 per week will be released, each approximately 8 minutes in duration. These videos contain an explanation of the theory, and worked out problems.

Despite having taught the course in academic settings for 5 consecutive years (2010 to 2014), I still want to craft the online videos in a way that makes better use of online delivery.

Do you plan to use any external software (e.g. integrations with external websites, social media and collaboration tools, etc.) in the class? If so, please describe the software and intended use.

I do have a Twitter account that I push announcements through, to which students can optionally suscribe. Important annoucements can be posted and emailed, however the Twitter feed might point to articles of interest, or note that a new set of videos has been uploaded.

Machine-graded Assessments

Machine-graded exercises and assessments are offered in most courses. These can comprise multiple choice questions (radio button, dropdown lists, checkbox) and short answer questions (checked against a numeric range, regular expression, or mathematical expression). Alternatively, structured output or programming assignments allow students to submit code or data that is checked against an instructor-provided grading routine.

Please enter the number (or a range) of machine-graded exercises and assessments you plan to use in your course:

1 assignment each week, so 6 total.

Briefly describe the envisioned design of the machine-graded exercises and assessments. What will students be asked to do? For programming assignments, what programming language will be used, and how will they be graded? [Sample Description]

There will be 6 weekly quizzes consisting of multiple-choice and short-answer questions. Assessments may be submitted up to one week after the due date.

There will also be a cumulative final exam consisting of multiple-choice and short-answer questions.

Do any of these assessments require running external code? If so, will the code be run client-side (by students), server-side, or both? Will you require Coursera server space? Additionally, please provide more details about the source of this code: is the code from commercial-grade software, or is it something you wrote, or is it student-generated, or a combination?

I don't anticipate having to run external code.

Peer-graded Assessments

Peer assessments are used for any assignment that cannot be machine-graded. Students grade each other's assignments according to a grading rubric that has been clearly defined by the instructor.

Please enter the number (or a range) of peer assessments you plan to use in your course:

One.

Briefly describe the envisioned design of each peer assessment. What will students be asked to do? [Sample Description]

Students will provide an outline of an experimental project they are interested in. They will list their response variable, factors that they will manipulate to verifiy if a cause-effect relationship exists to the repsonse, and list other disturbances they will control and/or measure during the experiment.

The experiment will not actually be performed (unless the student would like to).

The students will outline the choices for their experimental procedure.

A full rubric will be provided for students to grade each other. This rubric will have been tested in a regulary university course before being used in the MOOC, to ensure that it can be successfully applied.

Description of Grading Policy

At the end of the course, students will see their final grade in percentage form, as determined based on the grading policy. The University may also choose to award a Coursera Statement of Accomplishment or Signature Track Verified Certificate to those students whose final grade meets or exceeds a certain threshold. These come in the form of a PDF document that signifies successful completion of the course.

Briefly explain how the final grade will be calculated for the course. What will students need to do in order to earn a Statement of Accomplishment or Verified Certificate (if applicable)? [Sample Description]

The final grade will be based on 6 quizzes (50% of the final grade), 1 peer assessments (20% of the final grade) and a final exam consisting of short answers and multiple choice questions (30% of the final grade).

To receive a Statement of Accomplishment, you have to obtain >= 70% of the maximum possible score. To receive a Statement of Accomplishment with Distinction, you have to obtain >= 80% of the maximum possible score.

Instructor Responsibilities

The content of this section is derived from the contract that the University signed with Coursera.

Instructors and their teaching staff undertake the following responsibilities:

1. **Content design:**
    a. Designing, recording, and editing lectures into short, segmented videos.
    b. Creating rigorous, engaging assessments that allow students to test their learning and gain feedback.
    c. Uploading the video content, assessments, slides, and other accompanying materials onto the hosting platform.
    d. Preparing a specified amount of course material in advance of the course start date, as per our quality assurance protocol. In particular, this includes:
        i. The first week's worth of course content uploaded at least one month prior to the scheduled start date of the class;
        ii. The first two weeks' worth of course content uploaded at least two weeks prior to the scheduled start date of the class.
2. **Copyright clearance:** Working with University copyright experts to ensure that the content (lectures and assessments) is clear of copyright issues, as per University-provided guidelines.
3. **Accessibility for students with disabilities:** Ensuring that the content is accessible to users with disabilities, in compliance with Coursera's policies. This involves implementing the following practices:
    a. Verbally explaining handwritten text or graphics in lecture videos;
    b. Uploading slides to accompany lecture videos that use them;
    c. Reducing the amount of content on slides that is not accessible to screen readers (e.g., using text tables or formulas rather than ones created as images);
    d. Ensuring that all images used in assessments have a text alternative.
4. **Course delivery:** Monitoring the discussion forums during the first offering of the course in order to ensure that class-specific issues (e.g., concerning grading policies, lecture content, or assessments) are addressed.
5. **Course reusability:** Ensuring that the content can be easily reused in subsequent offerings of the course for which the instructor might not be involved. This includes:
    a. Avoiding references to particular dates in lecture videos (e.g., "The homework will be due next Monday, March 4" or "It's a beautiful summer day today");
    b. After the first offering of the course, systematically editing/removing references to dates and episodes that are specific to the first offering of the course (e.g., an announcement about correcting a typo on the final exam, or about extending due dates because of Hurricane Sandy), as well as references to activities for which instructor involvement is necessary (e.g., "We hope to see you at the next live Google+ Hangout").

Acknowledgment of Agreement

For the University Administrator: Signing indicates that the University has reviewed and accepted the Course Specifications and Instructor Responsibilities sections of the Course Development Agreement.

For the Instructor: Initialing indicates that the instructor has reviewed, understood, and acknowledged the Course Specifications and Instructor Responsibilities sections of the Course Development Agreement, to which the University and Coursera are Parties. You should be aware of the parameters for the design of the course and the responsibilities under the Course Development Agreement.

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University Administrator Name

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University Administrator Signature

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Date

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Instructor Name

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Instructor Initials

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Date

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Coursera Representative Name

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Coursera Representative Signature

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Date