Final Report  
2017-2018 Teaching Committee  
College of Engineering  
April 23, 2018

Members   
Hiroyuki Sugiyama, chair   May 2019  
Mark Andersland             May 2020  
Michael Mackey             May 2020  
Engineering Faculty Council Liaison: Charles Stanier

General Charge  
The Teaching Committee shall be responsible for all matters relating to evaluation and 
 improvement of the quality of instruction in the college, and for making appropriate  
 recommendations to the dean and the faculty.

Specific Charges for the 2017-2018 Academic Year

1. Oversee the College Teaching Award nomination and selection process and revise as needed.

   The Teaching Committee reviewed the College Teaching Award nominations and selected the  
   2018 award winner.

2. Continue to collect data regarding TA appointments for all ENGR courses. Using this 
   data set and any other information you find useful, explore the impact of increased 
   College enrollment on TA sustainability and the undergraduate and graduate 
   educational experiences.

   The committee collected the TA appointment data for AY2017-2018 and added them to the 
   previously compiled data set (see supplementary information). The ratio of student enrolled to 
   the TA FTE for this academic year ranged from 55 (Fluid Mechanics, Fall 2017) to 174 
   (Mechanics of Deformable Bodies, Fall 2017). Overall, the ratios for each course are stable. The ratio of Mechanics of Deformable Bodies is relatively higher (174 in Fall 2017 and 142 in 
   Spring 2018) than the other ENGR courses (an average of around 100 in AY2017-2018). The 
   ratio of undergraduate to graduate TAs tends to either increase (e.g., Intro to Engineering 
   Problem Solving, Intro to Engineering Computing, Statics, Dynamics, Thermodynamics, etc.) 
   or remain at the same level (e.g., Circuits, Material Science, Design for Manufacturing, etc.) 
   in recent years. The committee recommends that the EFC examine the trend.

3. Continue to monitor ICON (Canvas). Report any problems with this change as it 
   affects the College’s educational mission.

   The committee met with Annette Beck and Victoria Maloy in ITS to follow up with the CoE 
   feedback on ICON (Canvas) in Fall 2017. They provided an update on recent changes in ICON 
   (see supplementary information). Several new features requested by CoE faculty in the survey
were added, including ICON Archive and ICON Data Reports that allows users to report on grade distributions and statistics. However, integration of email to ICON (Canvas) seems to be difficult to implement. ITS suggested that faculty use MAUI for emailing students.

Mark Andersland has been appointed to the ICON Steering Committee, providing a liaison for the CoE. The ICON Steering Committee is responsible for guiding the efforts of the ICON Service Team that impact academics at Iowa, and facilitating communication about these efforts. During AY2017-2018, guidance was provided concerning CANVAS feature development and deployment; the conditions under which TAs, support staff, and DEOs may be granted course access; and other ICON initiatives. One example is ICON’s Unizin Affordable Content initiative. Through this initiative, instructors who require students to purchase etexts or publisher supplements such as McGraw-Hill Connect, WileyPlus, or Mastering Engineering, can leverage the negotiating strength of Unizins 25 institutional members (of which Iowa is one) and 900K+ enrolled students to secure discounts of 40% or more off the best available individual student purchase price. Students access the etext or resource through ICON and the discounted price is automatically applied to their university bill. Students who drop receive a full refund. All publishers who provide etext versions of their texts participate. Interested instructors are invited to contact Annette Beck, Director of Enterprise Instructional Technology, for more information.

4. (Joint with technology committee) Monitor the instructional spaces and teaching resources in the South Annex of SC, as those spaces come online, including standard ITS classrooms, as well as teaching laboratories and the new digitally-enabled collaborative learning space for team-based education. Work with staff and EFC to identify and correct any defects with those spaces. Report to the faculty regarding new teaching spaces.

The teaching committee discussed instructional spaces and teaching resources in the new Annex of Seamans Center with Danny Tang, a director of Engineering Technology Center (ETC). There are two university classrooms (3655 SC and 3630 SC) and a collaborative design space (2040 SC). Some defects of audiovisual systems were reported and temporarily resolved. However, permanent fixes to the A/V systems in 3655 and 3630 will not take implement until after the end of the semester, as they require significant time. The committee will keep monitoring the instructional spaces in the new Annex with the technology committee and ETC.

5. (Joint with technology committee) Study the adequacy and effectiveness of electronic tools and facilities available for offering online courses. Make recommendations to the faculty to improve the experience of faculty who choose to teach online courses.

The committee solicited feedback from CoE faculty, who have taught engineering courses online in the past three years, regarding effectiveness of electronic tools and facilities available for online courses during Spring 2018 (see supplementary information for more detail). Of those who responded (N=6 out of 14),

- 100% received assistance/support from Information and Technology Services, Engineering Computer Services, or Distance and Online Education in preparing online courses. The technical support included training for lecture recording/editing and advice for selecting appropriate tools. Faculty noted that their support is good.
• 67% found that the software used to teach online courses was adequate. The software included Zoom for teleconferencing with students; UICapture/Panopto for creating video lectures; and Powerpoint and Drawboard PDF for giving lectures. Faculty noted that video editing with Panopto is slow and difficult to use. Improvement would be required.
• 80% found that the equipment/facilities used to teach online courses were adequate. The equipment/facilities included Microsoft Surface Pro, Wacom pen tablet, headset, and microphone. Faculty noted that the surface pro was not ideal for the continuous workload needed to make videos or run online sessions, and the fan runs at high speed, which can be noisy (one can hear it on the recordings). A patch on the screen also got very hot, which was uncomfortable to write on.

The time spent for preparing for the first offering of an online course ranged from one to three months. It was commented that preparing self-explanatory lecture notes and recording the lectures for online courses are the most time consuming. The subsequent offering requires updating lecture notes and videos, homework assignments, and exams. The time spent ranged from a day or two to three weeks. It was suggested that computer hardware (e.g. laptops with stylus, audio, and video hardware) be made available to faculty who run online courses. It was also recommended to look at the effectiveness of the online vs in-class courses.


The final report is herewith respectfully submitted with several items of supplementary information:
• TA data for ENGR courses: Fall 2008 – Spring 2018
• ICON updates
• Online course survey results


• Oversee the College Teaching Award nomination and selection process and revise as needed.
• Continue to collect data regarding TA appointments for all ENGR. Using this data set and any other information you find useful, explore the impact of increased College enrollment on TA sustainability and the undergraduate and graduate educational experiences.
• Monitor the instructional spaces in the new Annex to identify and correct any defects.
• Study the effectiveness of online courses.

Hiroyuki Sugiyama
Associate Professor
Mechanical and Industrial Engineering
TA DATA FOR ENGR COURSES: FALL 2008 – SPRING 2018

**ENGR: 1100 Intro to Engineering Problem Solving**
(Engineering Problem Solving I)

**ENGR: 1300 Introduction to Engineering Computing**
(Engineering Problem Solving II)

**ENGR: 2100 Statics**
TA DATA FOR ENGR COURSES: FALL 2008 – SPRING 2018

**ENGR:2120 Circuits**

![Graph for ENGR:2120 Circuits]

**ENGR:2130 Thermodynamics**

![Graph for ENGR:2130 Thermodynamics]

**ENGR:2510 Fluid Mechanics**

![Graph for ENGR:2510 Fluid Mechanics]
Changes made to ICON in the past year

Instructure is committed to consistently improving the Canvas user experience. Their cloud-based platform allows them to maintain an agile production cycle of three weeks, and provide users with bug fixes, enhancements, and new features on a regular basis.

Since the March Survey, you have asked for an update on changes that have occurred in Canvas. Here is a summary of some of the changes you may have noticed:

**Chat tool updated (04/01/2017)**
- Instructor Moderation
- Timestamps
- Chat history

**Announcements enable-able on any Home Page (06/03/2017)**
- Enable this in Course Settings > More Options

**Student Context Card (02/18/2017)**
- Profile picture (if applicable)
- Student name/nickname link: view the student’s user profile page
- Mail icon: send a message directly to the student from the page
- Course name and section: view the name of the course and section (section name only included for courses with multiple sections)
- Last login: view the last login date (does not display if the student has never logged in); the card only displays the time when the login is on the current date, the day of the week when the login was within the current week, and the full date for any later logins.
- Grades button: access the student’s grades page
- Analytics button: access the student’s analytics page (button only available to users with the course analytics permission)
- Number of last graded items in the course: view a maximum of the last 10 recently graded assignments with the assignment’s grade (shows according to grading scheme, but grades default to points if the grading scheme does not fit)

**Blueprint Courses (06/24/2017)**
- Blueprint Courses allows Canvas admins to create content and learning objects, lock specific settings or content items, and push updates to all associated courses through course synching.

**Canvas DocViewer**
- This feature replaces the current Box previewer and Crocodoc annotation tools in Canvas and provides improved performance.
- 10 hour timeout for DocViewer sessions, with Expiration Warnings at 9 hours 50 minutes, 9 hours 55 minutes and 9 hours 59 minutes. A session can be restarted at any time by refreshing the submission page.

**Assignment Duplication (07/15/2017)**
- Duplicating an assignment duplicates all items in the assignment including the name, description, point value, options, and published status:
Discussion Duplication (10/28/2017)

- Discussions can be duplicated in the Discussions page or the Assignments page. The duplication option is located in the Settings menu for every available discussion. When a discussion is copied, the word Copy is added to the end of the discussion name.

Canvas Teacher Mobile App (08/05/2017)

- Canvas Teacher allows teachers to facilitate their courses on the go, both inside and outside the classroom. This app provides quick access to grading submissions, communicating with students, and updating course content—three of the most frequent course facilitation tasks for teachers—through Announcements, Assignments, Discussions, and Quizzes.

Rich Content Editor Accessibility Checker (10/28/2017)

- The Rich Content Editor Accessibility Checker assists instructors and course designers to maintain accessibility requirements in Canvas content. The Accessibility Checker is located in the Rich Content Editor menu bar. Depending on the size of the browser window, users may have to scroll the menu bar horizontally to view the Accessibility Checker icon.

Gradebook History Filters (10/28/2017)

- The Gradebook History page has been redesigned for improved performance and includes display filters for a specific student, grader, assignment, and start and end date. Previously the Gradebook History page only displayed the name of the assignment with a grade change. Additionally, this feature is redesigned based on existing data in Canvas, so displayed content is still retroactive.

- This change also removes the previous limit of 2000 grade changes and allows instructors to view all grade changes in the course. For admins, the Gradebook History page integrates with the Admin Tools Grade Change Activity log, which also does not include a grade change limit.

ICON Data Reports (03/24/2017)

- This tool reports on grade distributions and discussion statistics using Canvas Data Unlike the previous items on this list, this tool was created here at Iowa.

Changes COMING to ICON soon

1. Gradebook

Gradebook Enhancements addresses the most foundational items (phase I) and then builds on those in phase II to elevate the user experience of Gradebook. Specifically focusing on:

- Intuitive Organization
- Automation & Flexibility
- Communication & Clarity

Development for Gradebook Enhancements is underway, and they have many instructors testing completed features.

Completed

- New menus for more settings and sorting options.
- Control over color feedback with a built in color key.
- More filtering options.
- Accessible and improved grade entry.
• Drag and drop total columns.
• Crosshairs and highlighting for orientation.

Phase I - In Progress

• Late and missing flags with automatic deduction policies.
• Improved commenting.
• Instructor defines if grades post automatically or manually.

Phase II - Future Work

• Improved Grading Scheme selection on assignments.
• More total viewing options, replacing 'Treat Ungraded As Zero'.
• Resizing of the total column in the gradebook.
• Total grade adjustment.
• 'Message Students Who' for gradebook totals.
• Turn off automatic calculation and manually enter totals.
• Add more notes columns in the gradebook and export all note columns.
• Add a couple points for all students on an assignment in bulk.
• Option to hide points and/or percentages from students.
• Grading Schemes export as they are shown in gradebook.
• Updated search allows searching for students & assignments.

The Canvas Community page with further information is here: https://community.canvaslms.com/groups/focus-group-gradebook

2. Analytics

Analytics 2 will give Teachers, Students and Administrators the right info at the right time to make teaching and learning easier. They are improving Canvas analytics to make them interactive, responsive and actionable. With a primary focus on:

• Modernizing data engine for faster performance
• Developing of interactive dashboards to facilitate data exploration
• Providing actionable information and insights

• Analytics 2: Teacher: Student Performance - In Progress
  o Interactive chart with average grades for assignments
  o Filtering data by assignment type
  o Identify subset of students by performance on the assignment
  o Message the subset of student
  o Compare subsets and sections

• Analytics 2: Teacher: Student Participation - Future
  o Insights into students interaction with course material
  o Identify students with below typical engagement
  o Message students or subset of students
3. **Quizzes LTI**

Quizzes.Next is a best-in-breed assessment engine that enables instructors to capture meaningful and actionable data to positively affect the instructional process. Designed with simplicity in mind, this tool empowers instructors and learners to move toward growth in learning. Specifically focusing on:

- Authoring, delivery & reporting
- Question management & item banking
- Simplified design and responsive user experience

Quizzes will simply be an Assignment. The “Quizzes” tab will eventually be removed.

There will be a + Quiz/Test button in the Assignments area.

It will be possible to align Outcomes to quiz questions at the item level.

Brand new item types include Hotspot & Stimulus Content questions.

Locking of individual distractors within a question will be possible.


4. **UDoIT**

The Universal Design Online Content Inspection Tool (UDoIT), helps instructors become more aware of course site accessibility and provides the ability to fix potential accessibility issues to instructors in their course.

This program was developed by the University of Central Florida, and will be available to the University of Iowa soon.
In an effort to continuously improve software and facility support available for offering online courses in the College of Engineering, the Teaching Committee is soliciting your input. Your responses will be used to identify resources that could be helpful to other faculty and identify areas for improvement. Thank you for your time in answering this brief survey.

About how many days/weeks/months did you spend preparing for the first offering of your online course?

- I spent a great deal of time preparing notes and lecture videos for a flipped class that I was able to use for the online course.
- Question is difficult to answer. First time I offered the course during the summer it was a mixed traditional in-person face-to-face course for most of the students and an asynchronous online course for a few. I taped my lectures and then posted them online for the online students. Eventually I re-did many of the lecture videos both for the summer offerings and the academic year offerings. The lecture videos allowed me to begin flipping the course during academic year offerings. Students watched the videos before coming to class and we did problem-solving activities during class periods. These days, when I teach the course during summers, it is 100% online and asynchronous. So, a lot of time has been spent, but it was not just directed toward the development of an online course.
- About 3 months
- Part-time over about 3 months.
- one month.
- 4 weeks

Please list the major tasks needed to prepare for the first offering of your online course.

- My online course is asynchronous. For a synchronous course the setup and needs would be quite different. A lot of things needed to be in place for my course.
  1. You need a good set of self explanatory notes that cover the material.
  2. You need videos that further explain the material and demonstrate how to go about solving the application problems.
  3. A system for assigning, collecting, and grading homework assignments.
  4. A system for interacting with students online and answering their questions and providing feedback. These days I use Zoom.
  5. A system for giving exams.
- First the course content needs to be fully developed and ready to go. If the course is asynchronous you'll probably need some type of lecture videos. As a first attempt, these can be generated by taping lectures during traditional in-person courses. A system is needed for collection and grading of homework assignments. Originally I had students upload PDF scans of their paper homework assignments which were then manually graded by a TA. Presently, I use the online homework system of the textbook publisher (MasteringEngineering) which doesn't require manual grading. Additionally, the assignments are randomized which cuts down on students simply turning in copied solutions to the homework problems. A system needs to be in place to interact with students directly to answer their questions. Presently, I use Zoom to do this. Finally, a framework needs to be in place for giving exams. In my case, I use ICON/Canvas’s timed release features to allow students to print exams, complete them, and then upload PDF scans of the completed exams which are graded manually. Since many students are working, taking other classes, or even out of the country, I allow students to choose the time window during specific exam days when they'd like to take the exam. Students sign an honor pledge that they've completed the exams by themselves without using any forbidden resources.
Preparing videocasts was the most time consuming. This included reorganizing/modifying lectures to accommodate the videocast format (e.g. rewriting powerpoint slides, organizing written notes to fit into shorter times). Organizing and drafting the syllabus was also quite a bit of work, as it laid out the units in the course, each with their associated video casts, book chapters, and homework problems.

Making lecture notes (PPT) and recording them (Podcasts). Deciding on assignments and exam dates. Preparing the syllabus. Posting these on ICON.

Identify a mechanism to communicate with students during lecture.

About how many days/weeks/months did you spend preparing for subsequent offerings?

- I teach the course between summer online offerings, and spend quite a bit of time refining it every time I teach it. I've done many iterations of all the video using Panopto. Each time the course notes are changed, the videos need to be updated.
- I use the same materials to teach the summer online offerings that I use to teach the academic year course offerings. The courses are always being refined/tweaked which involves edits to the notes and sometimes retaping the video lectures. For each course offering, whether during the regular academic year or during summer online offerings, new exams are written and used.
- About 3 weeks
- I spent a day or two prior to offering the course, to update the syllabus, select homework problems, and make minor revisions. During the course, three to four hours per week were spent preparing for online sessions.
- One weeks.

Please list the major tasks needed to prepare for the subsequent offerings of your online course (if different from those needed for the original offering).

- See answer above. New exams are written for each offering.
- See answer above. For me, updating/refining the summer/online materials is done as I maintain the materials for the academic year offerings. The courses are never on autopilot. Even assuming that all of the materials are in good shape, the instructor still has to be available to answer student questions by email, or to interact with them during "office hours" via Zoom.
- As listed in previous question.
- Updating lecture notes and assignments
- Identify technology to communicate with students. There is not a good solution for this task yet.

Did you receive any assistance/support from Information and Technology Services, Engineering Computer Services, Distance and Online Education, or any other UI group in preparing your online course(s)?

YES=100 % (N=6)
NO=0 % (N=0)

If yes, what type of assistance/support did you receive?

- I’ve received help when I've encountered problems. I've had many problems over the years with slow streaming of the videos, and what technology or hardware to use, etc. I seek out and receive help with these types of issues.
- I receive some help, usually when I had problems that needed to be addressed. During the first two years of offerings, I has problems with the lecture videos streaming very slowly. Staff at ECSS and ITS looked into this and finally resolved it. I've received minimal instruction with Panopto and I would like to receive some additional instruction in how to edit videos and add more "bells and whistles". When I
wanted to do "live" online office hours, I talked to people at ITS about how to do it and what technology I'd need.

- Training for lecture recording, setting up the website, setting up online exams, training of TAs
- On the first offering, I received considerable assistance from Distance and Online Education to learn the technology (UICapture/Panopto and Zoom). In addition to instruction, they held a mock online session with me so that I could practice operating the Zoom controls. They were also present during my first real online session.
- Using UICapture and computer labs.
- Advice about which of the available inferior tools to use.

Please list the software that you used to create and administer your online course(s).

- ICON (both D2L and Canvas) have been very helpful. Panopto for making videos. Zoom for online conferencing with students. Powerpoint for making online notes.
- ICON (originally D2L and now Canvas). Both were very good and adequate. I used Panopto to create the video lectures. I used Zoom for interactive online office hours.
- Panopto, Zoom, MS Word, Matlab, Excel
- UICapture/Panopto for the recorded lectures. Zoom to administer online class meetings. Powerpoint Drawboard pdf for handwritten notes in lectures and for writing during online sessions (very good program!)
- Powerpoint, UICapture, Blackboard
- SVN, PrairieLearn, Panopto, Zoom, TurningPoint, PowerPoint, CLion

Is the software that you selected in the above question adequate?

YES=67 % (N=4)

NO=33 % (N=2)

If not, what features or needs are not being met by the software used and/or what software package would better suit your needs?

- It is adequate, but I'd really like some help with video editing. Thus far I've found the Panopto tools to be slow and difficult to use. Would love to have some workshops on how to make and edit good, engaging videos.
- Yes it is adequate, but it could be better as well. I find it very difficult and slow to edit videos in Panopto. Perhaps with some instruction I'd find it is quite powerful and easy to edit videos and add additional features. If Panopto is not the best software, perhaps we should try something else, like Camtasia.
- Setting up of exams needs to be simplified.
- I hold most of the online meetings using a Microsoft Surface Pro, on which I run Drawboard pdf (I purchased this myself from the Microsoft online store -- $5 or $10). Sometimes I would like to use my Mac, but I haven't been able to find software for the Mac that has as good of functionality.
- No integration between tools. I ended up using zoom on my laptop and treated each lecture as a teleconference meeting.

Please list the major equipment/facilities that you used to teach your online course(s).

- The major piece of equipment I use is a surplus document camera. I use my Surface Pro 2 notebook computer to interact with students on Zoom.
- Microsoft Surface, Microphone, headset, fast internet
MS Surface Pro 3 Occasionally a MacBook Pro with Wacom tablet Plantronics C320 headset Blue Yeti microphone (for recording lectures)
- Wacom pen tablet
- My laptop.

Were the equipment/facilities you listed above adequate?

YES=80 % (N=4)
NO=20 % (N=1)

What improvements would you suggest?

- There should be a recording facility in SC. There should be a practice room in SC where the instructor can practice the course prior to making it live.
- Marginally adequate. The surface pro is a little "light duty" for this task. I typically run online sessions from home because they are held from 8-10pm, so a portable device is useful; however, the surface pro isn't ideal for the continuous workload needed to make videos or run online sessions, and the fan runs at high speed, which can be noisy (you can hear it on the recordings). A patch on the screen, also gets quite hot, which is uncomfortable to write on. The Dean's office kindly purchased the required hardware when I first prepared the online course; however, it has been a few years now and it is aging.
- An integrated solution.

Please share any recommendations you have that could improve the process of online course generation and administration for CoE faculty.

- Overall, I have received good support from the CoE and Continuing Education. It would be helpful to have computer hardware available that could be borrowed for running the course (e.g. laptops with stylus, audio and video hardware). I think we also need to look at the effectiveness of the online courses vs in-class, and perhaps some advise (and assistance with implementation) on best practices would be helpful.
- Better technology to record lectures will be useful, e.g., speech to text translation. I see ads on the internet where a person is speaking and their voice is being translated in real time. This type of facility can improve the quality of the recorded lectures substantially.