Provost’s Advisory Group on Digital Education and Environments

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1. Executive Summary
The Provost’s Advisory Group on Digital Education and Environments (PAG on DEE) has prepared a comprehensive overview of the philosophies and practices in online education at Purdue and at eight peer institutions. These reviews surfaced important issues and questions for more in-depth discussion and investigation in the general areas of resources and support, policies and practice, and goals and execution. They also identified and described the important stakeholder groups associated with online education, including: students, faculty, TAs and lecturers, administrators, support staff, professional societies and accrediting bodies, and external developers and purveyors of online content.

Purdue has chosen a highly decentralized approach. In terms of graduate education, the emphases that have emerged as a result of this approach include a strong focus on providing MS- and MS-level graduate instruction, as well instruction in support of professional certification. At the undergraduate level, the emphasis has focused primarily on expanding capacity in large demand courses.

Financial models vary greatly across Purdue’s many online programs. This includes variations in fees charged, ranging from: 1) program-based fees based on market pricing, to 2) per-course fees tied to a combination of residency and market considerations, to 3) courses offered in-load for no fee beyond regular Purdue tuition. This also includes variations in the way that revenues are handled. In some cases, all revenues are generated from Purdue internal sources and are used to sustain the operating budgets of contributing units. Faculty participation is considered ‘in-load’. In others, faculty are paid an incentive fee to develop courses and share in any resulting royalties. In still others, faculty are paid a smaller incentive fee to assist with course development, but are not incentivized financially to teach the courses. Finally, in other models revenues are distributed to units and it remains the discretion of the chair as to whether or not these are shared with faculty.

Some negative aspects of the decentralized approach are that there is a great variation in the effort that is put into developing online courses. This ranges from simply putting a video camera in the back of the room and broadcasting a live lecture to producing content using a green screen studio, professional scriptwriters, and high-end video and audio editing. As one would expect, there are corresponding variations in the appearance and feel of the resulting educational products, as well as variations in the ease with which learners can extract value from them. Part of the cause for this is that the various agencies that support online programs at Purdue are not always well-utilized by the faculty. This contributes to a lack of consistent sharing of best practices, which is accompanied by a loss of efficiency when educators encounter problems that have already been solved elsewhere.

A positive aspect of the decentralized approach is that individual units are free to pursue markets/stakeholders at their own pace, in their own style, and for their own purposes. This encourages faculty ownership of educational approaches, and allows programs to be nimble in response to the demands of their learners.
2. Reports from Peer Institutions

In September 2014, the PAG on DEE was asked to discuss Purdue’s short- and long-term digital education goals, how best to engage digital education stakeholders on campus, and whether or not the campus is organized appropriately to deliver a high-quality and purposeful digital education.\(^1\) The overarching goal is to maintain the high quality of a Purdue education regardless of its delivery mechanism and to take advantage of digital environments to improve learning and broaden the university’s impact. Digital education and environments include a broad spectrum of instruction from using technology to share and augment the traditional classroom experience to distance learning to Massive Open Online Courses (MOOCs) and other digital learning objects such as electronic textbooks, self-directed tutorials, and webinars. Online courses, in particular, became the group’s initial area of focus.

Currently, 135 undergraduate courses are being offered online each semester at Purdue, and 51% of Purdue’s graduating seniors have taken at least one online course.\(^2\) Provisioning online courses offers the opportunity to increase the scale and impact of instruction, to use new technologies to enable learning in new and engaging ways and meet the needs of different learning styles, to develop new analytics to improve student performance, and to evaluate outcomes with different forms of credentials. However, reports such as Inside Higher Ed’s Survey of Faculty Attitudes on Technology illustrate skepticism and negative faculty perceptions towards the efficacy of online learning compared to in-person classes.\(^3,4\)

To begin its exploration of the topic, the group read and summarized reports from peer universities including Stanford\(^5\), Georgia Tech\(^6\), Open University\(^7\), Michigan\(^8\), MIT\(^9\), Harvard\(^10\), Illinois\(^11\), and the University of California system\(^12,13\) in order to identify common themes, questions and potential issues that arose from the reports and that should be addressed in Purdue’s approach. A categorization of issues from the peer report summaries can be found in four tables in Appendix A.

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\(^6\) PowerPoint slides shared from presentation given by Dean Nelson Baker on July 22, 2013.

\(^7\) PowerPoint slides shared from presentation, “MOOCs and Online Education: The Evolving Big Picture”, given by Marian Petre on July 22, 2013.

\(^8\) “University of Michigan Online Programs”, private report and notes.


\(^11\) “MOOC Strategy Advisory Committee Interim Report, November 2013”, MOOCs@Illinois, [http://mooc.illinois.edu/resources](http://mooc.illinois.edu/resources).


While these summaries do not present a comprehensive picture, they informed the group’s early discussion of needs at Purdue with respect to:

- **Resources and support:**
  - Marketing of programs, and market surveys to identify opportunities
  - Student admissions and management
  - Business functions (tuition collection)
  - Technical infrastructure and support, e.g., studios, content production
  - High quality content development; access to and use of pedagogy expertise
  - Support for proctoring exams
  - Support for students with disabilities

- **Policies and practices:**
  - Coordination and shared resources, e.g., common web presence, branding
  - Sharing best practices
  - University policies that incentivize faculty and units to create online programs, e.g., revenue sharing, seed grants, teaching release
  - Clearly identified path and support for creating new online programs

Important questions arising from the experience shared by peer institutions that were identified by the group include:

- **The overall goals:**
  - What are the goals of online learning and the scope of the initiative?
  - What is the spectrum of distance education (social capital verse revenue generation) or who decides the priority of projects going forward?
  - How do we define the community being served? Who are our stakeholders and how do determine and meet their needs?

- **The execution:**
  - What functions are centralized (at the campus level) and de-centralized (at the levels of the college, school, department, and individual faculty members)?
  - How are credentials registered and awarded for online courses? How are new forms of credentials (e.g., badges) managed?
  - What outside partnerships (e.g., Unizin) or vendors (e.g., Deltak) can help us realize our vision?
  - What is the role of the campus learning management system (e.g., Blackboard, Canvas) and does it scale and integrate to meet our needs?
  - How can analytics be developed and monitored for improvement and student success?

- **Resources and policies:**
  - How are resources allocated, and how do we leverage existing resources?
  - What policies are needed?
  - How are faculty incentivized to provide content and teach online courses?
How do we create university level resources that will prepare faculty/staff for distance education at various expertise levels?

How do faculty/staff interface with distance resources?

What metrics and assessment define success? How do we ensure quality?

The group has identified many key stakeholders whose input is valuable to the development of a robust online program. Faculty and other instructors are a critical stakeholder group as the providers of the instruction and educational content. They define learning outcomes and award credentials. Many are already invested in particular online teaching techniques, tools, and platforms. They include experts in curriculum and instruction as well as the subjects they teach. A digital learning environment could present an opportunity to share best practices and deliver instruction in a way that is not possible in a traditional setting and to innovate and evaluate new pedagogies. Students are also a primary stakeholder. They comprise a diverse group that has different goals and learning styles. For example, one student may be taking courses for credit towards a degree and another may be a professional looking to improve his or her practice by viewing a seminar over the web. Digital learning has the potential to make their education more convenient and affordable as well as adaptable to different learning styles and instructional techniques. Systems must be usable and enhance learning, not detract from it. University administrators are interested in changes and opportunities in higher education to improve the functioning and enhance the reputation of the institution. Potentially disruptive technologies such as MOOCs present an opportunity for the university to reach a new and highly diverse student body. Coordination of digital learning programs is necessary for assessment to ensure quality and scale. A business model and processes are needed for sustainability of programs, accounting, record-keeping, and support. Staff who support educational technology and facilities are vital to enabling instructors to effectively teach their students in a digital environment. Examples include the maintenance of a Learning Management System (e.g., Blackboard, Canvas) as well as systems and services for content capture and delivery such as recording studios and video streaming and archiving. Instructional designers can partner with faculty to migrate educational content from a traditional delivery mode to digital or to create new content. After goals and requirements have been defined, the university will partner with one or more solution providers who may include an LMS vendor, firms that market online courses and recruit students, provide analytics software, or consortia or other organizations that connect to the larger ecosystem, as some examples. These partnerships will require a clear communication of what solutions can be provided and how they meet well-defined goals and objectives of the university.

3. Purdue Online Programs

This section is a summary of a number of interviews conducted by the PAG on DEE and various online stakeholders campus-wide. It has not been returned to the stakeholders for review, and as such it may contain factual errors. Every attempt has been made to minimize or eliminate these. In addition, there may be a small number of programs that have not been documented, and there are cases where information on a given program is incomplete. It is the belief of the PAG on DEE that such omissions do not detract in a meaningful way from the overall conclusions that can be reached from this study. The PAG on DEE also does not intend to pass any value judgments on any programs in this document, rather it is focused on providing an accurate (to the extent possible) snapshot of online activities at Purdue.
Overview

Purdue supports a vast array of online activities serving residential and remote students, as well as students who access hybrid programs (part distance, part on campus). These activities are highly decentralized, having evolved in response to faculty interest and market and student demand. As a result, the programs vary greatly in style, duration, sophistication, number of students impacted, costs, and revenues. This variety also makes it difficult to navigate the Purdue web to find all of our online offerings. The different types of online activities at Purdue are summarized in Table 1. Purdue also uses a number of online tools in support of education, as summarized in Table 2 (note, these are not the primary focus of this report). Purdue supports online education through PEC (Purdue Extended Campus), and through a number of distributed internal groups (Pro-Ed, ProSTAR, Purdue NExT, HUB-U, nanoHUB-U, CIE/Impact, ITAP, and individual units on campus). Table 3 lists the activities of these organizations. Purdue also has made substantial decentralized efforts in support of online activities. These are also shown in Table 3.

Table 1. Online instruction programs at Purdue

| Fee-based programs (professional degrees, certificates) | Activities in support of flipped classrooms |
| Tuition-based programs (graduate degrees) | Low-cost specialized courses leading to badges, licenses |
| MOOC courses (minimal costs to students) | Undergraduate courses to meet capacity demands |
| Webinars (to research, industry, education partners) | |

Table 2. Electronic and online tools supporting Purdue educational activities

| Blackboard (learning management system) | Electronic coursebooks developed by Purdue faculty |
| Piazza (online chat monitoring) | E-texts (electronic versions of printed materials) |
| Signals (monitoring student success) | |
| Homework submission and grading packages (bundled with textbooks) | |

Table 3. Services supplied by Purdue in support of online learning

| Online content design and development | Recruitment of online instructors |
| Studio support for creating online content | Marketing of Purdue online courses/programs |
| Student advising | Collecting fees/tuition and distributing revenues |
| Dedicated managers and staff | Dedicated websites/web portals |
| Oversight of online activities (quality, compliance with policies, student support, course equivalency) | |
| Managing relationships with 3rd party online content managers (Deltak) | |

3.1 Detailed Reviews, Centrally-Managed Organizations, and ITAP

ITAP is a centralized organization that provides hardware, software and logistical support to faculty, staff and students. It is Purdue’s centralized information technology organization. Their contributions to online instruction will be the primary focus here. In this regard, they build and operate Video Express (green screen) recording studios on campus (currently 8 studios in production, 1 nearing completion and with 3 more in planning). One of the existing 8 Video Express sites is located at the Calumet, another at the Anderson State-wide site. Of the 3 additional sites in planning, one is being planned for North Central. A production studio is also available for recording and broadcasting on the
West Lafayette campus. They provide instructional design services to faculty, and support software and hardware platforms that are used by faculty to develop and deliver content. The distinction between these instructional designers and those at Purdue Extended Campus (PEC) (discussed below) is not known, although they do collaborate (currently, PEC is buying out 30% of ITAP Instructional Designer resources. ITAP also provides hardware support for studios. They evaluate new software that is being considered for various purposes, including most aspects of online content creation and delivery. An exception to this is in the case of software associated with registration of students in online courses (PREMIS, managed by PEC). In addition, ITaP provides and supports the BlackBoard learning management software used by most on-line courses. The BoilerCast classroom system is also used to record classroom lectures and content and used for a small number of on-line courses. Kaltura provides the platform to stream media.

- **Video Express (Green Screen) Recording Studios**

  A number of programs use video studios on campus to film online content. There are 8 such facilities on campus, and the plan for them was that they be built in a ‘copy exact’ fashion. The concept was developed as a joint initiative between Krannert, the College of Technology and ITaP. Resources for the equipment came from ITAP (largely), with support being shared between Krannert and ITaP. Space was provided by hosting departments where these facilities reside. While the facilities were intended to be copy-exact, modifications have occurred to some facilities in response to user demand. When these needs are identified the changes are replicated to the other sites as time permits. For example, at least one facility (managed by PEC) has installed teleprompters, improved lighting, and a high-definition microphone to improve the quality of recorded content. Resources for this were provided by the faculty member who wanted these capabilities. As a general rule, operation of the studios appears to be left to the discretion of the units in which the studios reside. Similarly, the knowledge regarding how to utilize the studios to create online products is locally-owned, although there is a common set of instructions shared with the site hosts and a list serve is used to share ideas. There does not appear to be a formal process in place between the local facility owners to share best practices and ensure that the studios are operated as effectively as possible. Rather, each is operated largely at the discretion of the local ownership. A memorandum of understanding (MOU) was developed for the sites and outlines the responsibilities of ITaP, Krannert and departmental hosts. It is included below. To ensure that the service continues to meet faculty requirements, this service contains a feedback mechanism accessible via the website. In addition to this feature, ITaP surveys users of the service for feedback annually. Requests and modifications are prioritized based on like requests, time, and cost. For example Wacom monitors are being added to all sites based on survey feedback.

  The hardware in the studios is the responsibility of ITAP, which manages maintenance and repair of these resources. It is not known how much extra capacity (if any) there is in the scheduling of any individual studio or the suite of studios as a whole, but at present there does not seem to be any problem with interested faculty obtaining access to studios to perform video creation. To date more than 450 authors have recorded content to produce more than 10,000 recordings.

  The recording studios are not intended to support high-end video editing. Rather they are configured to support a basic level of media creation, which consists of a screen that is split
with the faculty member appearing on one side of the screen while talking, and some content (graphics, illustration, simulation, etc.) appearing on the other side. The facilities are designed so that a faculty member can record his/her own videos with little support and minimal post-production processing. The facilities automatically attach introductory and exit audio to each recorded faculty segment, so that a consistent beginning and end to each segment appears automatically. This limits the options available to faculty, but simplifies the creation of functional stand-alone video. The vision behind the creation of the studios was that they would be simple and straightforward to use and would provide an acceptable but not high-end product in terms of quality. If a faculty records a segment and it does not turn out well, then the effort to re-record it is minimal. It is not expected that a faculty member will record entire 50-minute lectures (or longer) at any one time, but will instead record significantly shorter vignettes (5 – 20 minutes at the longest). These are combined with separate learning activities to create complete online ‘classes’. It can take 20-30 hours to perform post-production video editing on a single minute of recorded video (depending on the complexity of the video). As a result, labor costs associated with professional-quality post-production video editing run into the range of $30-$100K/hour of edited video. ITaP has resources for hire when high quality video needs are desired.

**Purdue Extended Campus (PEC)**
PEC has responsibility for policy, logistics, and financial transactions associated with online courses and programs. PEC is funded through the Provost’s office to identify, develop, and support instruction for online courses that provide residential undergraduate students with greater access to courses they need to graduate in a timely manner. PEC also administers online degree and certificate programs for which a portion of revenues are returned to the sponsoring academic units to cover their expenses and advance other interests of the units. PEC also administers revenue-generating noncredit professional development programs that are primarily delivered online. These functions (along with other PEC responsibilities) are specified in Purdue policy V.B.4: Responsibility and Authority for Continuing Education and Conference Activities.

Specific areas of PEC’s current responsibilities include the following:

- **Registration.** Resident students enrolling in online credit courses register through their myPurdue accounts, as they do with any other courses. Distant students registering in online courses for degree or certificate programs either register themselves through myPurdue or are registered into appropriate sections in Banner by PEC support staff. Learners in noncredit programs register through the PEC-maintained PREMIS system, which also serves Conferences and various training programs across the campus.

- **Financial transactions.** Resident students enrolling in online courses pay for those courses as part of their regular tuition and fees through the Bursar. Distant students in degree or certificate programs also pay their tuition and fees through the Bursar’s office, but those funds are diverted to PEC-administered accounts to meet program expenses and for revenue distribution. Under V.B.4 PEC may seek exceptions to the Board of Trustees-approved rates to make credit programs more competitive in the marketplace. For noncredit programs, PEC sets rates to reflect cost and the market, and it collects
participation fees through PREMIS. Payments can be made by check or credit card (PREMIS is compliant with card industry security standards), and PEC can invoice employers for groups of participants.

- **Online quality control.** PEC instructional designers encourage faculty developing online courses to utilize best practices such as those reflected in the widely accepted Quality Matters rubric. However, PEC has no enforcement authority in this regard. Also, faculty wishing to teach online credit courses for resident students may do so independently of PEC; such courses do not, however, receive PEC compensation for instruction.

- **Regulatory and policy compliance.** V.B.2 charges PEC with ensuring that its activities comply with all relevant policies and regulations. These include all University policies, rules, Indiana Commission for Higher Education guidelines, and federal regulations such as the Americans with Disabilities Act. Of particular concern currently are the evolving standards for state authorization of distance learning programs; PEC is spearheading this compliance initiative for the Purdue system.

### Purdue NeXT

Purdue NExT is a faculty-led initiative to develop online courses catering to students at foreign universities, in particular India. The online content is frequently incorporated into existing residential courses at Purdue, at the undergraduate and graduate levels. The operating model is that each online NeXT course will contain the equivalent content of a 1 credit residential course offered at Purdue. Students pay a minimal fee to take these courses (it is believed that the fee is ~ $25/credit), and the support for the classes is provided by TAs and instructors at the international universities where the courses are taught. Students who complete a course receive a ‘badge’ certifying their completion. Assessments are built into the online content, and these are graded electronically. Achievement of a minimum standard on the assessments justifies receipt of a badge. When an appropriate number of badges are completed, the student can receive credit for a course from their home institution – not from Purdue. This is an interesting model, which can be considered, in some ways, to be the equivalent of international satellite programs such as Texas A&M at Qatar (http://www.qatar.tamu.edu/). In these satellite programs, the originating university (in this case Texas A&M or Purdue) provides curricular content and rubrics to assess achievement of educational outcomes. The content is then delivered by the host university (the remote university), and credit is awarded by the host university for the Purdue-sanctioned curriculum. Purdue NExT maintains its own green screen recording studio and a staff of students to assist in the creation of online courses. A suite of roughly 25 courses has been developed so far over a range of topics, and these are being marketed to international partners. The program has been in existence for less than 2 full years, and as such it is still in a growth mode. As discussed below, Purdue NExT is actively involved in a two-year experiment with edX, through which it will develop and offer at least 5 distinct MOOCs (massive open online courses) on the edX platform over the next two years. These courses will be shortened versions of the ordinary Purdue NExT courses. Purdue NExT received roughly $200K from the Office of the Provost in 2014/15 and is expected to receive roughly $300K in 2015/16. Purdue NExT has contracted with Deltak to maintain a website advertising the Purdue NExT courses. This site is seamless and it is not possible to detect that it is separate from Purdue. That is to say that while the site does not conform to the general...
Purdue guidelines for websites, it is a ‘Purdue’ site and there are no references to ‘Deltak’ anywhere on the site. Purdue NExT incentivizes faculty engagement in the development and delivery of online content as follows: Purdue faculty participants receive a supplement of $10K/course as well as a fraction of any royalties generated by the course. This financial model is more generous in terms of financial rewards to the faculty than the model used by PEC to incentivize faculty participation in online course development and delivery. Student fees are collected by PEC when students take Purdue NExT courses.

- **HUBzero, nanoHUB and nanoHUB-U**
  HUBzero can deliver interactive, graphical simulation tools through an ordinary web browser. Unlike a typical web portal, the tools in a hub are interactive and visual; you can zoom in on a graph, rotate a molecule, probe isosurfaces of a 3D volume—without having to reserve time on a supercomputer or wait for a batch job to engage. Anyone in a hub community can deploy new tools without having to rewrite special code for the web, and without needing special permission or downtime to deploy changes.

  The HUBzero infrastructure includes a tool execution and delivery mechanism based on Virtual Network Computing VNC. Any tool with a graphical user interface can be installed on the hub and deployed within a few hours. For legacy tools and other codes without a graphical interface, an interface can be quickly created by using the Rappture toolkit that comes with HUBzero. The Rappture interface helps to set up jobs and visualize results. The jobs themselves can be dispatched to XSEDE, the Open Science Grid, and other high-performance computing clusters through a variety of Grid and Cloud computing protocols.

  All of this provides a rich environment for building and deploying simulation/modeling tools for both education and research. In fact, our experience has shown that of the 300+ tools deployed on nanoHUB.org, many developed for research have been adopted for education, and vice versa. These interactive tools have been used for hands on homework assignments and a variety of senior design projects, whereby students can apply models and explore the effects of input parameters on simulated results. Each hub can support high performance computing, so students can use models that tap into computing power far beyond a typical desktop computer. And hubs can support any code that runs in a Linux environment, so engineering students, for example, can access MATLAB within a hub, and computer science students learning about programming via Message Passing Interface (MPI) can use compilers and execution environments installed within the hub. This enables instructors to bypass a wide range of installation and setup problems and focus on teaching the concepts that really matter in a particular field of study.

  nanoHUB and nanoHUB-U are elements of the same faculty-led initiative. They were developed with the support of an NSF grant with a goal of creating a scientific gateway that would allow the international scientific and engineering community to collaborate to advance research and education around nanotechnology. nanoHUB facilitates high-end research computing, simulation, and data to be operated and shared freely among researchers worldwide, allowing it to fill a unique role as an engine of research growth in the nanotechnology area. Since its inception, nanoHUB has grown to become an internationally-
An open-courseware initiative has been part of nanoHUB since 2002. In selected courses, instructors were videotaped during class sessions, and these videotapes were posted on nanoHUB.org along with related notes and instructional materials. In 2012, nanoHUB-U was launched to refine this open content courseware into formal, 5-week, faculty-led short courses. These courses are offered for free through the nanoHUB-U platform, and have attracted a good deal of student interest (more than 10,000 registrations to date). They are currently filmed in ITAP-sponsored studios and are offered in the form of YouTube videos where the faculty member is pictured on half the screen and some form of graphic under discussion is pictured on the other half of the screen. nanoHUB-U courses are available in several formats:

- **A free self-paced format** in which students watch lectures each week, complete homework assignments or tests that are auto-graded electronically, and work at their own pace until the course is finished. Faculty record themselves working problems and these recorded sessions are available online to the students. Daily multiple choice quizzes and weekly multiple-choice exams are available to the students, who have a given amount of time to complete an exam once they begin it. Students receive no certificate of completion for such courses.

- **Faculty-led courses** offer the students the opportunity to interact with faculty or TAs online. These courses run on a flexible, but constrained (5-8 week) schedule. Students receive a certificate of completion for completing these courses. This certificate does not have equivalent university credit, but the level of effort required is typical of that in a 5-week on-campus course. Faculty monitor discussion boards for about 1 hour/week in this format, and respond to selected student questions. Initially, a minimal fee was collected and students obtained a nanoHUB-U certificate of completion for completion of these courses.

- **A small number of full-semester Purdue courses** are also available in the nanoHUB-U format. This continues the initial open courseware initiative and simply deploys the materials in nanoHUB-U format. No interaction with faculty and no certificates are offered for these open courses.

- nanoHUB-U experimented one time with offering courses online for Purdue credit. Students registered for independent study, took the course online, and took exams in person.

- Selected nanoHUB-U courses are offered through the Purdue NExT initiative.

Twelve courses are currently offered in the self-paced format. Each of these was offered once in the faculty-led format.

As described in more detail below, nanoHUB-U is participating in the edX initiative, through which it is committed to developing at least 5 MOOC offerings over a 2-year period. The first such offering was launched online through edX on February 12, 2015. The second nanoHUB-U
course will begin on March 26, 2015. So far, faculty have expressed an interest in offering eight more nanoHUB-U courses through edX.

For most nanoHUB-U courses, support for a graduate student to assist the faculty member with course development is provided. No student fees are currently collected. nanoHUB-U has received roughly $463K in support from the Office of the Provost since 2011-2012, $77K of this total was received in 2014-15.

The nanoHUB open courseware initiative and the nanoHUB-U initiative are part of the nanoHUB project, which has received support from the NSF grants for the Network for Computational Nanotechnology (NCN) and Nano-Engineered Electronic Device Simulation Node (NEEDS) since 2002.

nanoHUB-U is the coursework component of nanoHUB project. Although PurdueNExT and nanoHUB-U make use of the same HUBzero platform, the principal difference is that nanoHUB-U is jointly funded by Purdue University and the NSF with the goal of providing open access nanotechnology focused short courses accessible to students in any branch of science or engineering.

3.2 External Partners, Deltak

Deltak is an Online Program Management (OPM) firm owned by John Wiley and Sons, Inc. In 2010 a Provost-appointed task force recommended that Purdue work with an OPM to grow its presence in the online market, specifically with respect to online masters degrees. PEC worked with Procurement on a vendor selection process, and Deltak was selected by a campus-wide committee from among nine OPMs that submitted proposals in response to Purdue’s RFP. Procurement negotiated a seven-year exclusive contract with Deltak, and the Purdue/Deltak relationship has been managed through PEC.

Like other OPMs, Deltak’s services include market analysis, online course development (in cooperation with faculty), marketing, recruitment, and retention activities. In addition, Deltak provides hosting services, 24/7 web support, and learning analytics (through an internal, proprietary tool). Deltak has coordinated with academic units to launch three highly successful online masters degrees: learning design and technology, and special education for the College of Education as well as strategic communication for Liberal Arts. A fourth degree in engineering technology is expected to launch in January 2016. Since the launch of the first program in August 2011, Deltak-administered programs have generated about $6 million in tuition for Purdue, half of which has been transferred to Deltak under the terms of the contract. It should be noted that no money is paid to Deltak during all of the prelaunch activities which include; market analysis, working with faculty and administration to support program development, providing instructional designers for online course development, and recruiting and working with prospective students for the new program. Deltak also manages the marketing of the noncredit Purdue NExT, which has been challenging; however, Deltak is projecting revenues of $1 million for 2015.

The Purdue Procurement and Purdue Legal offices recently negotiated an amendment to the contract with Deltak that effectively removes Deltak exclusivity, allows for negotiation of revenue sharing for individual programs, and creates administrative and operational levels of coordination. An RFP for other, complementary online vendors is being prepared by the Office of the Provost, in consultation
with PEC, ITAP, and select faculty who have been involved in the Deltak collaboration; it will be issued soon. It is expected that competition among OPMs and program-specific negotiations on revenue sharing will result in more desirable financial terms for Purdue.

- **Unizin**  
  Unizin is a planned collaboration among universities to create an open-source software platform that will allow scholars to share and distribute digital educational content freely without the need to engage with the publishing community. At present, Unizin seems largely to be a set of ideals and set of goals. The most important among these is the hope that, if successful, Unizin will be able to force commercial learning management systems (e.g., Canvas, Blackboard) to adopt open architectures so that learning vehicles and analytical results can be freely shared. A report summarizing the PAG on DEE’s thoughts regarding Unizin will be provided separately.

- **edX**  
  edX is a massive, open, online course (MOOC) platform founded by MIT and Harvard. Sixty-two other universities participate, with varying degrees of affiliation. These include large and small, public and private, domestic and international universities. Also included are agencies such as the International Monetary Fund and the Smithsonian. Purdue is participating in edX as part of a two-year experiment. Over the trial period, we will develop and deliver up to 40 courses on the edX platform, 10 of which must be distinct courses. In other words, if a course is repeated on the platform, it counts against our limit of 40 but is not considered distinct. edX courses are the equivalent of 1-credit courses. Students may take an edX course for free, or for a small fee may receive a certificate of completion. There is a joining fee charged to entities wishing to offer edX courses. This is $250K. In addition, there is an annual maintenance fee charged, based on the number of courses offered. Basic data on the learners is provided to the course instructors by edX, and for a fee, a more sophisticated dataset is available. Purdue has negotiated with edX to participate in this MOOC platform on a trial basis. The joining fee was waived, and the maintenance fee is $40K, only for the second year of the experiment. nanoHUB-U and Purdue NeXT drove Purdue’s participation in the edX program, and each is committed to providing 5 distinct courses during the trial period. In addition, a campus-wide call for participants was issued in the fall 2014 from the Office of the Provost. After some information sessions to be held in early Spring 2015, a small group (2 or 3) other courses from other programs on campus will be selected to also participate in the trial. Support for the development of edX course content is being provided by nanoHUB-U and Purdue NeXT for the courses they are developing, and by PEC and ITAP for the additional 2 or 3 courses in the experiment. There are two courses that will be launched soon in the edX partnership. These include one developed by Purdue NeXT and one developed by nanoHUB-U. These each have over 1800 students signed up as of the date of this report. There is an expectation with edX that faculty will actively monitor online chat with students and respond to questions. The amount of time that a faculty member is expected to engage in these activities is uncertain.

4. **Purdue Online Activities (not centrally-supported, by college)**  
This section provides a summary of current online education activities at Purdue. Quantitative data summarizing the programs described below is listed in Appendix B.
College of Agriculture, Agricultural Economics

The College of Agriculture offers an MS-MBA dual degree program with IU’s Kelley School of Business. The program leads to an MS in Agricultural Economics from Purdue and an MBA from Kelley. By combining offerings from two universities, it is possible for each university to satisfy its coursework requirements by using credits from the other university’s required courses. As such, this program can be completed in 27 months, which would not be possible if both degrees came from Purdue (or from IU). The College also offers a 21-month MS in Agricultural Economics from Purdue with no secondary degree from Kelley. The students taking the Purdue MS courses take the same Purdue classes, independent of whether or not they are in the MS-MBA or MS-only programs. This program has evolved over a nearly 30-year time frame, from its beginnings as a face-to-face executive education program to its current status as both non-credit programs and the distance based degree-bearing program. This evolution was in response to market demand for the degree program and the evolution of the worldwide web. These are blended programs, involving five, one-week residency sessions spread over the entirety of each degree program. The program began as a collaboration with Management at Purdue, but the Purdue Management faculty wanted to focus on international experiences, leading to the partnership with Kelley. Kelley has a highly-ranked distance MBA program that has historically been well-supported. Students take 21 credits of Purdue courses (7 courses) in cohorts of ~30. They also take 36 credits of IU coursework. They pay tuition to IU for these 36 credits, and pay tuition to Purdue for the 21 Purdue credits. It is not known if PEC collects these funds, but it is believed that they do. The Ag Econ programs has no distance education support from PEC or any other Purdue online resource. AgIT maintains the hardware and software used by the Purdue faculty and students.

The Ag Econ program has hired a learning and design expert, Liza Braunlich, who considers the learners and the mode of content delivery, and helps design and improve the offerings continuously over time. She receives support from Ag Econ to stay abreast of the latest in online pedagogy. The Purdue content is largely voice-over-PowerPoint. The Ag Econ program emphasizes that the value of this approach comes with the fact that the content can be readily accessed on tablets, smartphones, and even over car radio. The instructional content is complemented by electronic discussion forums. Students are assigned to groups to do their work in these classes, and the cohort nature of the program gives students a sense of connectivity to each other and to Purdue. Faculty and graduate TAs manage the discussion forums. The Ag Econ programs are switching to the Canvas LMS from an IU-owned software called ‘Angel’.

Faculty who develop and/or teach in this program do not receive overload credit. It is considered part of their normal load and the three credit on-line courses receive equal “credit” to teaching on campus courses. Faculty who developed the content did so because they believed it was the “right thing to do” and enjoy the interaction with industry professionals.

Students pay $68K for the total tuition of the program. The tuition to IU is larger than the Purdue tuition, because more of the credit hours are taught at IU. For a cohort of 60 students over 2 years, Purdue receives roughly $750K in revenue. Of these funds, roughly $550K is used to run the program, and roughly $80K is returned to the academic department. The disposition
of the balance is used to invest in maintenance and enhancement of the program with respect to marketing and sales efforts, professional development for staff and faculty, etc.

- **Agronomy**
  The online Agronomy program was developed to bring agricultural information and training to corporate partners. Five or six major companies participate in the program. PEC supports the green screen studio where the online content was developed. The faculty member who developed the content for this program was employed to develop online educational materials by his professional society, and was subsequently hired by Purdue to perform similar tasks. He desired high-def audio and video products for this purpose, and found that the existing green screen studio, while very well set up and convenient for everyday video tasks, was inadequate for these higher end productions. As a result, he purchased teleprompters and high-end microphones, worked with PEC technical staff to integrate them into the Video Express setup, and hired undergraduate students majoring in relevant areas to perform video editing for him. He also hired a professional PowerPoint developer to rework his existing PowerPoint materials to be effective in the green screen environment. For a 10-minute video, it took roughly 4 hours to script and coordinate to get materials that were in a recordable state. The costs associated with the production of the higher-end video materials were ~$5K for the equipment, ~$7K for the rework of the PowerPoints, and ~1K for a stenographer to script the lectures. The commercial costs for preparation of high end video such as this are $1K/finished minute of video, as reported by the faculty member. Kaltura (a high-definition video software platform) did not support high-def video through Blackboard when this project was first launched. As a result, it became necessary to install YouTube links to get the high-def product out. This is a common solution to incompatibility between software – many authors/instructors use YouTube to deliver content. Since then Kaltura capability has been enhanced and Kaltura is being used to host the videos. Although it is believed that PEC has marketing services available, the director of this online program stated that there is no entity within Purdue that is set up to do marketing work in support of his courses. As a result, the instructor is doing the marketing work. The financial model for this program is that companies will pay $75K up front, after which each company can enroll as many of its employees as desired in the online courses for $1K/employee for a 3-year period.

When the faculty member who developed this program began his work, he was assisted by the instructional designers in PEC. He was unaware that there were instructional designers in ITAP or CIE, but eventually benefited greatly by hiring one of the ITAP designers to commit a portion of their time to his project.

- **College of Education, Learning Design and Technology**
  The Learning Design and Technology (LDT) program area of the Department of Curriculum and Instruction offers an online MS in Education degree. This is a 33 credit hour program that officially began in the Fall semester of 2011. At the current time there are approximately 180 students in the program.

  All marketing and recruiting for the program is completed by Deltak Innovations (Deltak). Student tuition (in-state tuition is the same as the residential program, out-of-state is twice the cost of in-state) is collected through PEC. All courses were created by LDT faculty and they are
distributed by the faculty through Blackboard Learn. Deltak Innovations assists with a student coordinator who helps to place students in their appropriate course/section, monitors student progress, and helps when students have issues or difficulties in the courses. The coordinator does not deal with course content issues or grades. Faculty members are assigned (as part of their customary in-load responsibilities) to teach one or more courses in the online program and to take "lead" responsibility for those courses where multiple sections are being offered at any one time. Two clinical faculty members have been hired to coordinate the teaching and to hire other limited-term lecturers (adjuncts) to help teach courses when the demand goes beyond the normal faculty load. These coordinators also train the limited-term lecturers on how to teach within the program, their responsibilities, etc. A mentoring program for new limited-term faculty has also been developed and is utilized in the training of those desiring to teach within the program.

The courses within the LDT MS program are developed by the faculty and are all taught using Blackboard Learn. The courses are based heavily on online discussion. That is, reading and other assignments are given weekly to the students and the students generally are required to participate in weekly online, asynchronous discussions. Course instructors are required to lead the weekly online discussions, monitor student responses, and offer guidance and insights to the discussion topics. All courses are highly project-based and course instructors grade and give feedback on these projects. Courses have all been designed to be completed in 8-week terms (2 terms per semester, 6 terms per year). The 33 credit-hour MS program is designed to be completed in 5 semesters. Students are recruited to start the program at one of three start times (January, May, and August). With such demands from the discussions, desirable course size is capped at 21-22 students. In most cases, courses have between 18 and 20 students.

Faculty incentives for participation include a $4000 yearly supply and equipment incentive. This is payment for their work in developing, updating, and "leading" the courses that are taught. In addition, 50% of tuition received is paid to Deltak for their work on recruiting, marketing, and the student coordinator. The remaining funds are divided between the University, the College, the Department, LDT faculty (as mentioned above) and for student support (i.e., scholarships, TAs) within the LDT program area.

**Special Education**

The Special Education program within the Department of Educational Studies of the College of Education created a MS online program that began Fall 2014. Their program design closely follows that of the LDT Online MS degree program. Courses are highly engaging with readings, applied assignments, field experiences in P-12 schools, and discussion-based activities. Each course is 7- weeks duration (with one week separating courses), with 3 starting points for incoming students (January, May, and August). Participating students are allowed to take no more than 2 courses per semester due to the intensity of activities (expectation of dedicating 15-20 hours per week per course). The special education program employed Deltak Innovations to recruit and market their program. They included Deltak's student coordinator who monitors the student progress and addresses issues students have about the program (not individual course content). In addition, the Special Education program uses Deltak's instructional design expertise in the development and overall delivery of their courses. Deltak's Learning Management System, “Engage” is a simpler and user-friendly system than Blackboard and can
be accessed by faculty and limited term lecturers from multiple locations. Faculty design
courses and Deltak staff develop the course within the Engage system. Two unique features of
this program make it different from the established LDT program. First, this program offers
three “tracks”: 1) master’s only, 2) master’s with initial Indiana teaching licensure, and 3)
master’s with advanced Indiana teaching licensure (Indiana has reciprocal licensure agreements
with 42 other states). Thus, students learn not only online but also during school-based
placements that are monitored electronically by university supervisors. This effort also entails
coordination with the College of Education’s Office of Field Experiences and Office of
Professional Preparation and Licensure. The second aspect that differs from the LDT program is
that this program coordinates efforts with faculty in the Purdue-Calumet special education
program to teach courses and provide field-based supervision. The student fee and faculty
incentive structures in this program are similar to those in the MS in LDT program. The
exception is that revenue generated is also shared with the Purdue-Calumet campus. Plans are
currently in place to expand this program to include a certificate in applied behavior analysis
that leads to national board certification and an additional licensure option in intense
intervention (severe disabilities). Enrollment in the special education master’s program has
grown from fewer than 10 “on the ground” students to almost 60 in the first two semesters (34
are in-state students). The program already has 26 applications for the summer semester with
an expectation that 40 new students will begin in May. The majority of new applications
represent students from out-of-state.

**College of Engineering, Engineering Professional Education**

The Division of Engineering Professional Education (EPE) is a faculty-led initiative that currently
offers over 100 graduate level online courses in support of Master’s degrees and certificate
programs. The Master’s programs lead to the following degrees: MS (interdisciplinary Masters
of Science), MSE (interdisciplinary Masters of Science in Engineering), duel MSE-MBA (MBA
awarded by Kelley School of Business at IU), MSAAE (Aeronautics and Astronautics), MSECE
(Electrical and Computer Engineering), MSIE (Industrial Engineering), MSME (Mechanical
Engineering), and MS in CS (Computer Science). The Master’s programs are totally online, and
each requires 30 credits of coursework, with the exception of the MSE-MBA program which
requires more. The online academic certificate programs lead to certificates in: Noise Control,
Digital Signal Processing, Applied Heat Transfer, and Applied Statistics. These certificates
require between 12 and 15 graduate credits from a specified curriculum that is appropriate for
each certificate. In addition, the Division offers online short course programs in multiple topics.

Roughly 1000 students participate in EPE academic programs each year, distributed among
roughly 100 courses. Roughly 150 of these students are pursuing graduate credit that can be
transferred to other institutions, roughly 100 students are in a hybrid-style program (a blend of
online and residential coursework), and the remaining approximately 750 are taking fully online
programs. The EPE program is one of the largest of its kind in the United States. It is both the
largest and most selective of similar programs offered by Big Ten institutions. It recently was
ranked #4 in the country by US News and World Report in its review of online graduate
engineering programs. This ranking included assessments of faculty credentials and training,
student services and technology, student engagement, admissions selectivity, and peer
assessment.
Students must apply for admission to the EPE programs in the same way that they apply to regular residential programs. Each 3-credit course in the program currently costs $3300. The majority (about 85%) of courses are delivered by placing multiple video cameras and a microphone array in a traditional classroom, and then streaming the lectures live as well as recording them for asynchronous access at a later time. Students do homework concurrently with their on-campus colleagues and take proctored exams at hundreds of remote locations around the world. Research has shown this method to be effective and the least disruptive to faculty routine. The remaining approximately 15% of courses are developed and delivered by faculty interested in optimizing the distance learning experience and typically require significantly more resources to deliver including additional faculty time on task. The emphasis in the EPE program is on providing the highest quality online educational experience to students while being mindful of faculty time and the considerable variation in the interest level of faculty in online instruction. Online learners take identical exams to the residential learners, using proctors vetted by EPE. EPE uses fees paid by the online learners to fund TAs for the courses based on enrollment. EPE expenditures on teaching assistants and other direct instructional costs approaches $1 M per year. Faculty and TAs who have 'online' office hours may hold these hours concurrent with their office hours for the residential course or may use different times, at their discretion. EPE provides chat environments so that students can communicate with each other to aid their learning experience. There are a number of courses, typically in engineering design, in which distance students work together on team assignments.

EPE incentivizes faculty participation in their programs by providing either $275/online learner or a flat fee of $3950 for a semester, whichever is larger, to the units in which the faculty reside. The Heads of the units have discretion over how much of this incentive goes to the faculty and how much is retained by the unit. After incentives have been distributed and operational costs have been met, there are typically remaining funds that are distributed as fully discretionary funds to the participating academic units. This amount was about $1.5 M last year and is on an upward curve.

The online graduate engineering and computer science market is highly competitive, particularly so for selective programs such as those at Purdue. Last year there were approximately 17,000 students pursuing an online engineering or computer science degree in the United States. Less than half of those would be admissible to Purdue so the market is quite small and globally distributed. Many of Purdue’s peer group institutions have competing programs. EPE maintains its own marketing group that uses all available modern techniques including web based promotion, video conferenced webinars, and social media to identify and recruit students. EPE emphasizes competency and strategy to achieve and maintain success of its programs.

When on-campus students wishing to take the residential course cannot find space in the course and instead wish to take the online version, they typically register for the residential course and observe the content online. They then take the exams as any residential student would. This is negotiated with individual faculty on a per case basis, but it allows the fully residential student to avoid paying additional tuition for online instruction.
In addition to the traditional credit courses and programs described above, EPE also offers several very well received online short courses. These attract on the order of 1000 registrations per year.

- **Professional Practice (Co-Op)**
  The Office of Professional Practice (OPP) is interested in offering courses online to assist students in the Co-Op program and help them complete their undergraduate degrees in less than 5 years (the ‘on-time’ schedule for a student in the Co-Op program). PEC has assisted in the administration of the courses offered, but not in their creation. A small suite of courses is available to the Co-Op students online, including 200- and 300-level courses from Engineering, and a 300-level Math course. OPP supplements the payment that PEC makes to the instructors of these courses during the summer session, by adding an extra $4K/class. This is done to help get more courses online. The instructor compensation by PEC during the spring and fall semesters is quite lucrative and no additional payment from OPP is necessary. Heads of the units that offer the online courses that support the Co-Op program do not always consider teaching an online course as the equivalent of teaching a full course in face-to-face mode. A $200K gift was made by a co-op alumnus, and is used to provide 2 research grants at a level of $50K each to support 2 faculty members, who are looking at online delivery of undergraduate engineering courses to identify ways to make them more effective.

- **College of Liberal Arts, Undergraduate Online Programs**
  The online programs in Liberal Arts at the undergraduate level are focused on expanding the capacity of Purdue to teach its resident students. PEC plays a supporting role in the delivery of these courses, which are reported to be taught by every unit in the College. PEC provides $5K to the delivering unit for each online course offered. Liberal Arts considers this as a resource that is meant to cover the cost of instruction. PEC negotiates these rates on a course-by-course basis, placing a premium on online courses that increase capacity. The courses are taught by graduate TAs, who cost $7500/semester, such that Liberal Arts believes it operates these online courses at a loss. Most of the courses offered online are developed new, from scratch, each time they are offered. If multiple sections of a course are offered, coordination across sections is performed, although each section is developed separately. Some of the courses offered through this program are offered in 8-week modules, while others are offered over a traditional semester.

Just over 2000 students were enrolled in online UG courses in Liberal Arts in the Fall of 2014. These students were taking courses in Art, Anthropology, Chinese, Communications, English, History, Japanese, Philosophy, Political Science, Sociology, Music, and Theater. Many of these courses were offered in multiple sections.

- **Online Program in Communication**
  This program was launched in the summer of 2014. There is a graduate-level and an undergraduate-level component of these online activities. This program offers both a 30-credit MS and a 9-credit certificate. The program is administered through Deltak, and to date, the faculty involved are pleased with Deltak’s performance. Deltak’s role includes primarily suggesting different ways to present content, although Purdue has final say in the look, feel,
and mode of delivery of all content. Deltak also handles all the marketing and promotion of these online programs.

The professional MS program iterates each time it is offered, to improve the courses continuously. There will be ~150 students in this program in the Spring, paying $450/credit in-state and either $750/credit or $675/credit out-state. The goal is to have ~300 active students in the program each semester at steady-state, to generate gross income of $550K/semester. All of the courses in the professional MS program are offered on an 8-week cycle. This means that the teaching evaluations, grades, tuition, and registration are all off-cycle, and the many limited term lecturers who are hired to teach this program are also hired off-cycle. It is apparently problematic each semester when it comes time to reconcile these many off-cycle activities. It is believed that PEC is responsible for managing this reconciliation, in concert with the Registrar and Bursar.

- **College of Management, Executive MBA Programs**
  The Executive MBA programs target current working executives. They are broken into two parts, a series of presessions comprising roughly one-third of the program and the remaining two-thirds delivered via full immersion face-to-face experiences. There are two versions of these programs, an Executive MBA (EMBA) version and an International Master’s in Management (IMM) version. The EMBA targets domestic executives, while the IMM involves 2 face-to-face experiences at Purdue (1 at ‘launch’ and 1 residence) and 4 face-to-face experiences with international partners. Online content is delivered to students via SharePoint. Both degree programs include 48 credits of study, and are completed in roughly 20 months. When the students are on-campus, they are engaged in study from 8 a.m. to 10 p.m. for 6 days. Costs are $75K/student for the IMM program (to be renamed the Global Executive MBA in ’15-’16, with an increase in cost to $80K/student) and $80K/student for the EMBA program.

  Faculty teaching in the EMBA and IMM programs work with students 6 days/week, for one-half day at a time when the students are on campus in the residential part of the program. It is believed that this level of engagement is taken to be the equivalent of one regular course in teaching load calculations.

  Krannert hires Adam Hagen from ITAP (50% time) to work on development of online content. They consider him to be an expert in online education. He works with faculty to help them record video and to blend other features into their online content. The faculty use Camtasia to create online content in a desktop environment. This content is available to supplement existing residential courses offered through Krannert.

  Krannert also operates certificate programs, including Purdue NeXT. These are 100% face-to-face, except for Purdue NeXT, and they feed students into the EMBA and IMM programs. The certificate programs last from 3 days to 2 weeks, and each course costs from $2 - $5K. Cohorts of 30 to 50 or 60 students participate in the certificate programs. Custom programs are also offered, and to date these have been face-to-face. Clients have expressed interest in online offerings on occasion but these have not been fully developed.
A typical EMBA or IMM student cohort contains roughly 30 students. If demand existed, the EMBA and IMM programs could enroll up to four cohorts per year (two cohorts, or sections, per program), which would allow faculty a larger overload.

The IMM and EMBA programs run off-cycle from the typical semester cycle of Purdue courses. As such, properly documenting courses and credits is apparently a consistent problem, and students frequently receive grades of ‘incomplete’ due to mismatching of schedules. This is the responsibility of PEC. PEC handles tuition payments for EMBA and transfers cash to the Bursar and registration information to the Registrar. Tuition payments for IMM are handled by TIAS School for Business and Society. There are also problems with students obtaining appropriate immunizations and insurance, and with students receiving enough time to be properly ‘onboarded’ to Purdue. For example, students do not have adequate time to go through property training on campus safety and sexual violence policies. Arranging financial aid for participants can be challenging in the IMM program, because it requires documentation of the number of program faculty who are Purdue-based. This also appears to be a responsibility of PEC.

### M.S. in Accounting

The M.S. in Accounting program is designed primarily to assist Purdue undergraduates who wish to sit for the CPA exam. To sit for this exam, students usually have to have an M.S. degree, although this varies by state. This is primarily a residential program, although there are components that are offered online. These online components are offered primarily through Purdue NeXT, and consist of a bridge program to help international students become familiar with U.S. practices before they get into the regular program. For this purpose, the international students need to take the equivalent of 4 UG courses. This is accomplished through 9 Purdue NeXT ‘badge’ courses, which are the equivalent of 3 ‘regular’ courses, with the last 3 badge courses remaining to be created. Three of the badge courses were combined to form an online course for Purdue undergraduate students during the summer of 2014 (MGMT 35100). The purpose was to allow Purdue undergraduates to pursue internships during tax preparation season (primarily Spring semester) but also during the Fall semester when they are in demand to assist with end-of-fiscal-year activities. Forty students took the course in the online format, including roughly 20 students who were on campus at the time. The experiment is being repeated this semester, and consideration is being given to add a second course in this format (MGMT 35000). To support the 3-credit online course, an electronic textbook was developed that included all the HW, quizzes, etc. that were used for assessment of the content in the badge format. This book cost the students $10. The Management program has problems at present verifying and monitoring remote exams.

When developing the Purdue NeXT/badge offerings, existing instructors with online experience were used. The first two sets of badge courses (3 courses/set, each course leading to 1 badge, each badge the equivalent of a 1-credit course) were developed ‘in load’ by an experienced online instructor. The third set of 3 badges was developed as an overload, and the faculty member involved was paid a lump sum of $10K/set to develop the three courses based on his classroom course on the same topic. This is comparable to what would be paid a lecturer for a 3-credit residential course. A contract exists with Purdue NeXT and any funds provided by Purdue NeXT (royalties) will be paid to Krannert, not to any of the instructors who developed
the content. These future resources will be set aside for the Accounting Group to use. It is assumed that students taking the badge courses or the online summer course pay their tuition through PEC.

- **M.S. in Economics**
  The fully online MS in Economics program began in the Fall of 2013. It targets professionals with STEM backgrounds. All lecture content for this program is developed using one of the green screen studios. The curriculum is comprised of 30 credits, including 3-credit (3 courses), 2-credit (10 courses), and 1-credit (1 course, independent study) courses. When the 3-credit courses are offered, they are taught by the same professor who teaches the face-to-face version, using the same tests, homework, etc. Many of the courses have utility to students outside the online MS program, including students in the Ag Econ program, engineers to pick up an MS on the side as they complete their engineering degrees, and the more than 500 students majoring in economics, many of whom the unit would like to channel into the MS program. The strong emphasis of the Economics department is their PhD program. The MS program can also serve to identify promising students who would be successful in the PhD program.

  When the coursework was developed for the online MS program, PEC was not asked to assist. Nor did PEC assist in the development of UG courses offered by the unit. PEC also supports this effort by collecting tuition from the student participants. The Krannert Computing Center built the studio (green screen studios) to support the vision for Economics Department’s online programming. This design has spread across campus, leading to savings in recording of online content. Faculty developed content and put courses online as part of their ordinary load. They found that it was a significant time-sink.

- **Pharmacy, Pharmacy Continuing Education Programs**
  Learners participating in the Continuing Education (CE) Program provided by the College of Pharmacy are practicing healthcare clinicians, including but not limited to pharmacists, nurses, and physicians. These participants must take continuing education courses, as designated by the individual state licensure boards, in order to maintain their licenses. The Pharmacy CE Program has been accredited by the national governing bodies of these three groups - Accreditation Council for Pharmacy Education (ACPE) to provide continuing education for pharmacists and the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians. The Pharmacy CE Office collaborates with Purdue’s School of Nursing, which is an accredited provider by the American Nurses Credentialing Center’s Commission on Accreditation (ANCC), to provide continuing nursing education. In addition, the Pharmacy CE Program collaborates with IPFW’s Division of Continuing Studies, which is an accredited provider of the American Psychological Association (APA), to provide continuing education for psychologists.

  Based upon needs assessments that are constantly performed, topic areas are selected for the CE activities. Pharmacy CE Program administrators collaborate with Medical Education Company (MECs) to provide CE accreditation for their programming – serving in a capacity to provide oversight of educational program planning, development, and management with ultimate responsibility of the entire initiative. In addition, Pharmacy CE Program administrators will also collaborate with faculty from the College of Pharmacy, who develop programming with
overall project management and oversight being performed by the Pharmacy CE Office administrators. Purdue Faculty have created activities in the areas of Medication Safety, Tobacco Cessation, Nuclear Pharmacy, Pharmacy and the Environment, Medical Spanish for Pharmacists and Pharmacy Technicians, just to name a few. New areas are constantly explored as the needs are identified. Content is delivered in a number of formats, live as well as enduring which is provided online.

The financial model for the Pharmacy CE Program is built around funding to create, implement, and provide outcomes and participant credit for these activities. If grant funding is obtained, those funds are routed through SPS for processing and the applicable SPS F&A fees are included with the activities’ fees. Fees from projects that do not include grant funding, but are instead funded from societies or individual participants, are routed through PEC for processing and the applicable PEC F&A fees are included with the activities’ fees.

Purdue gives content legitimacy due to its academic reputation and impartial role, ensuring that the programs are educational in nature – providing scientific rigor and being fair-balanced with no commercial bias.

The program expenses come to ~ $300-$350K/year, and all of these must be covered by funds raised through the programming. Any residual funds are used to expand the Program.

- **College of Science, Online MS in Computer Science**

  Computer Science has developed an online MS program as well as a stand-alone online course. The stand-alone course is offered primarily to assist the K-12 system in recruiting and raising awareness of computer science content in K-12 classrooms. The online MS is offered through Engineering Professional Education (EPE), which is the same unit that offers the online MS programs in Engineering. The Computer Science program is young, having originated in the spring of 2013. There have been 36 class registrations and 19 class withdrawals since the start of the program. As in the case of the EPE courses in Engineering, the courses in this program provide video streaming or downloads of on-campus lectures. Online learner get a similar experience as on-campus students except for the use of email or video calls instead face-to-face meetings with the TAs and faculty. EPE assists this program with marketing and proctoring of exams. The piazza.com web service is typically used to manage the discussion forum. This is supported by ITAP, and is preferred over Blackboard by students and faculty in Computer Science. Homework is administered and collected electronically.

  Although off-campus learners do as well as on-campus domestic students, their performance lags the larger number of international students that are on campus. It is believed that this is due in part to admission standards that are less stringent for domestic students and to the lack of rigorous transcript checks for graduate students. The program assumes that their work experience has provided the students with the information needed to bridge the gaps in their knowledge, but this may not be true. Some of the courses that are required to complete this online program have yet to be offered online, and Computer Science, the sponsoring program, does not offer graduate courses in the summer. As a result, students can complete the program in their desired timeframe only by taking electives in the summer. Eventually, the
program wishes to reach a steady-state with 40-50 students continuously enrolled and moving through the curriculum.

Our standalone offering of CS 180, the introductory course in the undergraduate computer science program, is designed as a way to help K-12 students prepare for their undergraduate experience. Many school corporations in Indiana do not offer courses in computer science. Some do not have faculty with computer science background, and their existing offerings suffer due to this limited experience. Providing students with a self-paced course provides an option for many students to participate on their own terms. The CS 180 course is managed by Phil Sands and Debbie Perouli, and is being offered in 2014-15 to about 160 students, as well as 20 high school instructors that are following the course to improve their pedagogy. The class has no evaluation component and relies entirely on distributed instruction modules and a Piazza forum for class discussion.

- **College of Technology, Online MS Programs**
  The online programs in the College of Technology are administered through ProSTAR (Center for Professional Studies in Technology and Applied Research). These programs are all fee-based, rather than tuition-based, and the costs to students are substantially different than tuition rates. The costs are determined based on market rates for the degrees pursued, as well as minimum fees per Purdue policy. Elements of this program operate in collaboration with the College of Engineering’s Professional Education (ProEd) administrative organization, with which it shares staff and significant functional commonality.

Three different types of programs are offered. The first is a weekend MS distance-hybrid program. Under this model, the programs take 4 semesters to complete, offered 3 weekends/semester on campus, with the remainder of the instruction being online. These programs require 33 credit hours to complete. The online component to this program is managed through Blackboard and online forums. Degrees offered are all part of the department of Technology, Leadership and Innovation (TLI). Programs under TLI include: (a) Industrial Technology (IT), (b) Leadership; and (c) Biotechnology Innovation Regulatory Science (BIRS).

Certificate programs exist in Biotechnology Quality and Regulatory Compliance; and in Product Lifecycle Management (PLM). The Biotechnology Quality and Regulatory Compliance certificate program shares content with its parent BIRS MS program. The PLM certificate program is synchronous and online with cloud-based interactive labs.

The second type of delivery medium includes 100% online instruction leading to MS degrees in Aviation and Aerospace Management; Building Construction Management (now called Construction Management); Biometrics; and IT Project Management. These programs range from 30-34 credit hours per program. Building Construction Management involves time on campus (e.g., 2.5 days each August). Online delivered programs may involve both synchronous and asynchronous content.

The third mode of program delivery is entirely face-to-face, onsite, at a customer’s location. This is a MS program in TLI, currently delivered at Rolls-Royce in Indianapolis, Indiana. Previous
locations includes SIA and the Statewide Columbus Learning Center with a predominance of Cummins employees as participants.

- **College of Veterinary Medicine, Veterinary Technology Distance Learning**
  The Vet Tech Distance Learning program leads to an AAS (Associate of Applied Science) degree in Veterinary Technology. There are only 8 fully accredited veterinary technology programs offering online degrees in this area in the U.S., and this is the only such program in IN. It takes students an average of 4-5 years to complete this program, after which they are eligible to sit for their board exam, The Veterinary Technician National Examination (VTNE), which is required to become a credentialed veterinary technician in most states. Students used to pay $347.85/credit, based on rates set by PEC. Enrollment was observed to be dropping recently, so these rates were lowered to $250/credit, out of concern that the rates were high compared to competitors. The lower rate is only approved for 1 year. It is too early to know if this will make a difference in enrollment. The program engages 175-250 students/semester during the spring and fall semesters annually as well as 100-160 during the summer. 7 instructors, including 6 full-time instructors and 1 part-time instructor, are employed by the Veterinary Technology program to support both the residential and online programs. An additional 10-20 College of Veterinary Medicine faculty and staff provide course instruction for the distance learning program. The advising load for these students is high, as they rarely come to campus. The typical advising load is larger than 250 students/advisor/semester. All courses in this program are between 0.5 to 2.0 credits. Attrition rates are high (at least 50%) in the first two semesters, after which students remaining in the program generally complete it. The program involves 70 total credit hours of coursework, of which 45 credits involve web-based didactic courses. Seventeen of the remaining 25 credits are ‘clinical mentorships’, in which students make videos of themselves performing required tasks at local (to them) veterinary clinics and submit the videos to the Purdue course for evaluation. The remaining 8 credits consist of 3 credits of English Composition, 3 credits of ANSC 10100 or 10200, and 2 credits of elective course for college credit. The online coursework is administered through Blackboard, and it includes required and optional reading, as well as PowerPoint content (with very little voice-over). Courses are staffed by ‘professors of record’ who supervise, and instructors (who are veterinary technicians) who handle Skype, email, phone and other interactions with students. Instructors earn from $35 - $57K/year. The program generally collects ~ $150K/year, most of which is used to pay the instructors. The online content is developed by the faculty and instructors with no input from any Purdue staff (neither PEC, ITAP, nor CIE). PEC collects funds from students.

**Summary Observations of Purdue Online Programs, Learners Served and Objectives of Current Programs**
A myriad of online activities are underway, with primary focus in three areas: 1) MS or MS-level online degree programs, 2) professional certification programs, and 3) courses to increase capacity for undergraduate students courses to increase undergraduate capacity. There are also smaller efforts underway in the following two areas: 1) course and curriculum development to serve learners (for a fee) at other universities, and 2) course development for serving learners (for free or for minimal fees) via MOOCs or other ‘open online course’ approaches. The MS-, MS-level, and certification-bearing programs are designed to generate revenue for the university, and their fee structures are generally driven by market forces. The profitability of these ventures is not known. The programs driven by a
desire to increase capacity in high-demand undergraduate courses are serving substantial numbers of students. For some units on campus, these courses fulfill a second function, which is to provide an additional internal revenue stream that is used to supplement their normal budget allocations. Programs serving learners who are not pursuing Purdue degrees/certification, such as Purdue NeXT, nanoHUB-U, and the MOOC experiment, have different approaches to revenue. nanoHUB-U does not seem to be focused on raising substantial revenue, while Purdue NeXT is clearly focused on this aspect of online instruction. The MOOC experiment will inform campus of the effectiveness of MOOCs at driving up the visibility of Purdue programs, both instructional programs and research programs, and may have a positive impact on the profile of all our online activities.

**Integration/Consistency of Programs**

While PEC and CIE/IMPACT (and to a lesser extent ITAP) all provide staff to assist with the design and development of online content, many programs do not seem to take advantage of this service. The reasons for this are not known. The consequence of this is that all of these programs develop their own content in their own style with little apparent collaboration or sharing of best practices. As a result, the way that online teaching is handled varies considerably. In some cases, the courses are considered in-load, in other cases they are out-of-load. Similarly, some units use graduate students or staff to support online courses, while others use faculty. Quality is also variable across the many programs, as are the approaches used to incentivize faculty/unit participation. There is not a consistent internal financial model for setting fees, disbursing revenues, incentivizing faculty participation, supporting TAs, or supporting course development and delivery.

Many programs use the video express green screen studios to develop content, and most do so without requiring extensive post-production work. The time involved in developing and delivering online content generally seems larger than faculty expect when they begin.

Programs are split regarding whether to develop and deliver their own content or to deliver it using an external content provider (Deltak). While most programs that use Deltak are happy with the quality of the service provided by Deltak, they are an expensive partner, and they duplicate services that can be provided by existing Purdue agents.

5. **Conclusion**

It is clear from the early work of the group that the landscape of digital education is complex and will require clear vision, planning, stakeholder involvement, and unity of purpose to navigate. This vision and planning are not in place, nor is there a unity of purpose. If successful, Purdue has a tremendous opportunity to enhance its reputation and advance its land-grant mission through the digital learning environment with broad impacts for our students, our university, and the world.
Appendix A: Categorization of Peer Report Summaries
To begin its exploration of the topic, the group read and summarized reports from peer universities including Stanford\textsuperscript{14}, Georgia Tech\textsuperscript{15}, Open University\textsuperscript{16}, Michigan\textsuperscript{17}, MIT\textsuperscript{18}, Harvard\textsuperscript{19}, Illinois\textsuperscript{20}, and the University of California system\textsuperscript{2122} in order to identify common themes, questions and potential issues that arose from the reports and that should be addressed in Purdue’s approach:

Table A1: Summary of Recommendations (Peer Reports)

<table>
<thead>
<tr>
<th>Category</th>
<th>University Peer</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Initiative focusing on teaching</td>
<td>MIT</td>
<td>Create a central hub/institute that focuses on teaching – both traditional and online. They would focus on curriculum, technology, policy – all about teaching. Initiative to enable bold experimentation in education including online pedagogy. It would be responsible for developing and managing academic programs in education involving both traditional and online methodologies. Bold experimentation in teaching would be encouraged and where vision of the possibilities would be discussed and tried out. In particular look at opportunities offered by online and blended learning models.</td>
</tr>
<tr>
<td>Central hub for teaching</td>
<td>MIT/Harvard</td>
<td>Focus should not be on technology – but on core challenges facing higher education – affordability, improving completion rates, improving access.</td>
</tr>
<tr>
<td></td>
<td>Michigan</td>
<td>Centralized resource that supports online efforts – things like innovation in curriculum, learning analytics – help in developing models for student success</td>
</tr>
<tr>
<td></td>
<td>Stanford</td>
<td>Central point of access via a specific web site. Headed by the vice provost for online learning.</td>
</tr>
</tbody>
</table>

Table A2: Extending Impact on Campus (Peer Reports)

| Teaching and supporting specific types of | MIT | For example, strengthening the teaching of communications with online instruction. Use of online in helping students engage in service |

\textsuperscript{15} PowerPoint slides shared from presentation given by Dean Nelson Baker on July 22, 2013.
\textsuperscript{16} PowerPoint slides shared from presentation, “MOOCs and Online Education: The Evolving Big Picture”, given by Marian Petre on July 22, 2013.
\textsuperscript{17} “University of Michigan Online Programs”, private report and notes.
\textsuperscript{19} “Online Learning and the Future of Residential Education: Summit Summary Report”, \url{http://onlinelearningsummit.org/documents/summit-report.pdf}.
\textsuperscript{20} “MOOC Strategy Advisory Committee Interim Report, November 2013”, MOOCs@Illinois, \url{http://mooc.illinois.edu/resources}.
\textsuperscript{21} “Blue Ribbon Panel Report and Recommendations”, \url{http://senate.universityofcalifornia.edu/committees/brp/RP2Dorr_BlueRibbonPanelReport_Transmittal021313.pdf}.
\textsuperscript{22} “Final Report by the Blue Ribbon Panel; OIPP/UCEC Evaluation Report”, \url{http://senate.universityofcalifornia.edu/committees/brp/FinalBRPOIPPUCECEvaluation32214.pdf}. 
<table>
<thead>
<tr>
<th>Institution</th>
<th>Focus or Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential courses</td>
<td>Focus is not on expanding for a new audience, but in supporting and expanding the potential impact on the current residential students.</td>
</tr>
<tr>
<td>Michigan</td>
<td>Focus on enhancing residential learning</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>Enhancing on-campus experience</td>
</tr>
<tr>
<td>Online to improve curriculum accessibility</td>
<td>Acknowledge that accessibility is an issue. May provide online units that could be used by a wider audience on campus than what the normal size of a grad class can handle.</td>
</tr>
<tr>
<td>MIT</td>
<td>On-campus for credit courses/certification via Coursera, OpenEdX</td>
</tr>
</tbody>
</table>
### Table A3: Extending Impact on the World (Peer Reports)

<table>
<thead>
<tr>
<th>Category</th>
<th>University</th>
<th>Peer</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Determine vehicles to reach global audience (e.g., edX, MITx)</td>
<td>MIT</td>
<td>Determine the role of MOOCs and how do you increase potential learning? How will MOOCs become self-sustaining? How will MOOCs impact be assessed? Centralized approach for MOOCs (e.g., faculty have to apply) Technology is a tool for the teacher – no MOOCs without the teacher.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Harvard</td>
<td>What will be the role of MOOCs and how do you increase potential learning? How will MOOCs become self-sustaining? How will MOOCs impact be assessed? Centralized approach for MOOCs (e.g., faculty have to apply) Technology is a tool for the teacher – no MOOCs without the teacher.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michigan</td>
<td>How will the students get credit for the work they do online? MIT has XSeries certificates. This allows departments to reimagine the structure of courses and how they fit in a discipline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open U.</td>
<td>Revenue is a consideration – use of partnerships to create programs and increase enrollment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MIT</td>
<td>How will the students get credit for the work they do online? MIT has XSeries certificates. This allows departments to reimagine the structure of courses and how they fit in a discipline.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia Tech</td>
<td>Use of different technologies based on whether on or off campus and credit vs. no credit (e.g., MOOCs used for publicity and exposure for off campus/non credited courses).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stanford</td>
<td>Revenue is a consideration – use of partnerships to create programs and increase enrollment.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Georgia Tech</td>
<td>Use of different technologies based on whether on or off campus and credit vs. no credit (e.g., MOOCs used for publicity and exposure for off campus/non credited courses).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>U. of Ill.</td>
<td>No credit given for MOOC courses, credit given for “MOOC-plus” courses – must meet campus criteria.</td>
<td></td>
</tr>
<tr>
<td>Find ways to reduce barriers to offering programs and engaging faculty.</td>
<td>MIT</td>
<td>Recognize that there are all kinds of barriers that are involved with attempting to create online programs and to getting professors to work within those programs. Need to find ways to get past/over those barriers.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Michigan</td>
<td>Provide financial and consulting support to faculty wanting to develop and launch online courses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>U. of Cal</td>
<td>Clearly state goals, audience, and statement of scope, purpose, and assessment. Identify real costs including faculty time and support. Clear understanding of the differences in in-person and online learner experience.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>U. of Ill</td>
<td>Faculty compensation for MOOCs needs to be discussed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MIT</td>
<td>“Wikipedia-like” knowledge base that gathers the best community resources to share ideas and best practices.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Open U.</td>
<td>How will quality be ensured? How will learner analytics be used? What types of evaluations will be conducted?</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>School</td>
<td>Explanation</td>
<td></td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Residential vs. distance programs</td>
<td>MIT</td>
<td>Investigations into innovations in residential education. How could online learning impact residential learners? Can there be benefits for both groups? e.g., how could online/blended learning positively impact freshmen learning communities on campus?</td>
<td></td>
</tr>
<tr>
<td>Quality of programs/products</td>
<td>Open U.</td>
<td>How will you ensure quality?</td>
<td></td>
</tr>
<tr>
<td>Sustainability</td>
<td>Open U.</td>
<td>What is the plan for sustainability? Think not just about initial production, but ongoing presentation and update costs.</td>
<td></td>
</tr>
<tr>
<td>Comprehension of the magnitude of the work</td>
<td>U. of Cal.</td>
<td>Need to clearly state the goals and being very upfront with the stakeholders – especially faculty. Questions and skepticism about resource intent and allocation.</td>
<td></td>
</tr>
<tr>
<td>Who owns course content</td>
<td>U. of Ill.</td>
<td>Faculty own their course content</td>
<td></td>
</tr>
</tbody>
</table>
## Appendix B: Internal Online Program Details

<table>
<thead>
<tr>
<th>Program</th>
<th>Director(s), Contact(s)</th>
<th>Credit</th>
<th>Unique Features</th>
<th>Time to Degree</th>
<th>Details</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agricultural Economics</td>
<td>Allan Gray</td>
<td>MS &amp; MBA</td>
<td>MBA from IU (Kelly)</td>
<td>27 months</td>
<td>5 on-campus rotations (1 week each), 21 Purdue credits; 15 IU credits</td>
<td>Voice over PowerPoint</td>
</tr>
<tr>
<td>Agronomy</td>
<td>Bruce Erickson</td>
<td>N/A</td>
<td>High - res video and audio</td>
<td>single courses</td>
<td>Content customized to industry partners, partners pay $57K, then employees take courses for $1K/course</td>
<td>Video with multimedia enhancement</td>
</tr>
<tr>
<td>Learning Design and Technology</td>
<td>Tim Newby</td>
<td>MS</td>
<td>Deltak delivers; Involves partnership with Purdue-Calumet</td>
<td>5 semesters</td>
<td>Courses taught using Blackboard Learn</td>
<td>Video with multimedia enhancement</td>
</tr>
<tr>
<td>Special Education</td>
<td>Teresa Taber Doughty</td>
<td>MS</td>
<td>Over 100 graduate level and computer science courses; online experience for most courses designed to be as identical to face to face as possible; some courses use innovative approaches for online instruction</td>
<td>5-6 semesters</td>
<td>Offers 3 degree tracks, 2 leading to teaching licensure; Collaboration with Purdue-Calumet</td>
<td>EPE delivers and records courses from 5 multi-camera &quot;studio classrooms&quot; located in three campus buildings</td>
</tr>
<tr>
<td>Engineering Prof. Education (EPE)</td>
<td>Dale Harris</td>
<td>MS, MSE, MSAAE, MSECE, MSME, MSIE, and MS in Computer Science</td>
<td>All students are employed full time and most have families. Time to degree averages between 2.5 and 3 years.</td>
<td></td>
<td>Students pay as part-time students; students take exams in presence of proctor; faculty incentivized at $275/student or $3950 blanket; teaching assistants are provided as appropriate</td>
<td>Aynchronous instruction; synchronous field placements</td>
</tr>
<tr>
<td>Office Professional Practice (Co-Op)</td>
<td>Eckhardt Groll</td>
<td>BS</td>
<td>to add capacity to key UG courses; 2015 students enrolled across many disciplines</td>
<td>5 years</td>
<td>most courses developed brand new from scratch each time, including courses where there are many sections - each section is developed independently and uniquely</td>
<td>N/A</td>
</tr>
<tr>
<td>Liberal Arts</td>
<td>David Reingold</td>
<td>UG courses</td>
<td></td>
<td></td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>COM</td>
<td>Bart Collins</td>
<td>Professional MS</td>
<td>offered through Deltak; courses last 8 weeks; launched with help of Phil Pope</td>
<td></td>
<td>teaching evals, grades, and tuition off cycle; hire many UTLs each semester but they are off cycle; Deltak handles student registration and admission; very pleased w/Deltak; expect 300+ students in MS program at steady state</td>
<td>N/A</td>
</tr>
<tr>
<td>Krannert Executive MBA</td>
<td>Aldas Kriaucianas</td>
<td>MBA</td>
<td>hybrid program with some online and some on campus</td>
<td>20 months</td>
<td>Blended online and face-to-face with in-residence sessions approximately once per quarter for 1-2 weeks each over approximately 20 months</td>
<td>N/A</td>
</tr>
<tr>
<td>Accounting</td>
<td>Mark Bagrol</td>
<td>MS</td>
<td>online MS helps BS students sit for CPA license (MS required); bridge program helps international students learn US practices, prepare for (but not receive) MS, and sit for exam; need students to have 4 key UG courses to be prepared for MS - available in form of 9 badges via Purdue NEXT</td>
<td></td>
<td>Bridge program through Purdue NEXT. Converted regular courses to badge courses (1 badge = 1 credit), including making 3 badges into a summer course for Purdue Ugs (Purdue Ugs in demand as interns during tax season - often work then and have summers available)</td>
<td>Asynchronous content development in greenroom (recorded explicitly for online)</td>
</tr>
<tr>
<td>Economics</td>
<td>Jack Baron</td>
<td>MS</td>
<td>3 credit courses taught online and live by same prof., w/same tests, HW; online content can be reused for regular classes; faculty put classes online as part of regular load</td>
<td>34 courses for 30 Credits; focused on STEM students; PEC did not help with MS content, but did help with UG course content; ECON built own studio to develop courses; no pedagogical experts helped w/content development</td>
<td></td>
<td>N/A</td>
</tr>
<tr>
<td>Pharmacy Continuing Education</td>
<td>Marlene Heeg</td>
<td>Continuing Ed. credit</td>
<td>Courses use commercially-developed content</td>
<td>N/A</td>
<td>courses customized to partner needs</td>
<td>Video streaming or download of live lecture</td>
</tr>
<tr>
<td>Science</td>
<td>Renate Mauss-Medot, Robert Skeel</td>
<td>MS</td>
<td>Offered through Pro-Ed (CS participates as a result of agreement between science and engineering deans); use piazza.com discussion forum; supported by ITAP; HW through Blackboard</td>
<td>30 credits</td>
<td>little extra effort required for faculty; off-campus students perform comparable to on-campus domestic students - both groups weak on prerequisites</td>
<td>Video streaming or download of live lecture</td>
</tr>
<tr>
<td>Science</td>
<td>Phil Sands</td>
<td>UG course to supplement X12</td>
<td>CS 18000 offered online to recruit, raise awareness and help MS teachers integrate CS into classroom</td>
<td></td>
<td>CS 18000 offered online to recruit, raise awareness and help MS teachers integrate CS into classroom</td>
<td>Video streaming or download of live lecture</td>
</tr>
<tr>
<td>ProSTAR (Prof. Studies in Tech. and Applied Research), College of Technology</td>
<td>Mitch Springer, Mark Schuver</td>
<td>MS</td>
<td>&gt; 50% online, weekend hybrid, face-to-face; some collaboration with EPE (ProEd)</td>
<td>4 semesters (30-35 hours)</td>
<td>Aviation and Aerospace Mgmt, IT Project Mgmt, Building Construction Mgmt, Biotech and Regulatory Sci., Biometrics</td>
<td>Various, Distance-Hybrid, 100% online (Voice over Powerpoint; Face-to-Face onsite)</td>
</tr>
<tr>
<td>Vet Tech</td>
<td>Christina V. Tran</td>
<td>Associate of Applied Science in Vet Tech.</td>
<td>Robin Cunningham (PEC) and Eduvantage performed market research to set fee structure, all courses 0.5 or 2 credits; 45 credits of didactic learning, 17 credits of clinical mentorships, and 8 credits of non-veterinary technology coursework</td>
<td>4 - 5 years, on average</td>
<td>Prof. supervise but instructors interact with students; 7 instructors; high attrition (&gt;50%) in first 2 years; courses through Blackboard - mostly reading and occasional powerpoint; have one instructor involved with the Canvas pilot</td>
<td>Voice over Powerpoint</td>
</tr>
</tbody>
</table>

Note: The table provides a summary of various online programs offered by different institutions, including details such as program name, director(s)/contact(s), credit requirements, unique features, time to degree, details, and mode of delivery. Each entry highlights the specific details of the program, such as the number of credits, whether the program is hybrid or fully online, and any relevant features like the use of video streaming or Powerpoint presentations. The table also notes the time to degree, the mode of delivery (e.g., synchronous, asynchronous), and any specific features such as the integration of multimedia content or pedagogical support.