

Course Redesign Based On the Quality Matters Program: Examples of Before and After

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Abstract

Most universities continue to expand their online course offerings because there is strong demand for such educational opportunities. However, the quality of instruction for online courses continues to be a concern. The Quality Matters (QM) Program provides a set of research-based standards that can guide the redesign of a course and can be used as a rubric to evaluate a course. This paper shows the transition of one course as it was redesigned based on the QM standards. Specific examples of "before" and "after" content are shown along with discussion of the changes made and some design issues encountered. Feedback from students midway through the first semester using the redesigned course is presented.

Keywords: Quality Matters Rubric, Online Classes, Blended Classes, Course Design, Information Systems Education.

1. INTRODUCTION

The National Center for Education Statistics (2012) released data showing that 25.8% of students at post-secondary institutions are enrolled in some online courses. However, there is ongoing concern about the quality of online courses even as colleges offer more online programs. Dayton and McShane (2007) and others suggest, though, that high quality courses, whether face-to-face or online, share the same quality elements (Benton & White, 2010).

In the literature about online course design the Quality Matters (QM) Program is often

recognized for its faculty-centered process for improvement of online courses (Loafman & Altman, 2014; Finley, 2012; Westerfelt, 2011; Shattuck, 2007). The QM program began in 2003 as a consortium of colleges in Maryland that received a FIPSE grant (Fund for the Improvement of Postsecondary Education) from the U.S. Department of Education to develop a program for the design of quality online courses. Since that initial grant (<https://www.qualitymatters.org/research-grants/fipse>), the QM Program has become a self-sustaining organization that provides faculty training and a review process for recognizing courses that pass a formal QM course review. The QM Rubric has eight standards: course

overview and introduction (1), learning objectives (2), assessment and measurement (3), instructional materials (4), learner interaction and engagement (5), course technology (6), learner support (7), and accessibility (8) (MarylandOnline Inc., 2011). (A revised set of the standards was released in August 2014.) The rubric has three categories of standards: Essential (3 points), Very Important (2 points) or Important (1 point) (Finley, 2012; Benton & White, 2010).

A faculty member at a university in the Southwest wanted to redesign a course that had been taught once already as an online course and is expected to be an online offering one semester during each academic year. The instructor was dissatisfied with the organizational structure of the course and felt it was not easy for students to navigate and locate specific items.

Prior to redesigning the course this teacher attended a two-day QM Regional Conference. Shortly after that the instructor attended a 20-hour Course Development Camp based on the QM Program, and taught by the university's Instructional Innovation and Quality (IIQ) unit. This camp provided considerable support to the instructor and other workshop participants while they worked through the course design process. It may seem obvious but it is worth noting that most educational institutions have support services for faculty and their online course design efforts (Finley, 2012; Dayton et al., 2007). The instructor in this paper found the support provided essential to her redesign work.

This paper presents some "before" and "after" material from the redesigned course and primarily discusses four of the eight QM standards: course overview and introduction, learning objectives, learner support and accessibility.

2. THE COURSE TO REDESIGN

The course is part of an Information Systems (IS) degree in the College of Business and it is required for students majoring in IS. This course is also required by at least one other degree program in another college. The course title is "Systems Analysis and Design" and it is scheduled as an online course in the fall semester and face-to-face in the spring semester.

This junior-level course covers the systems development life cycle for designing and building

databases and applications. It includes coverage of techniques for project planning, information gathering, modeling and building prototypes. Over the past few years the instructor had organized the course into learning modules that are independent of any particular textbook. There is considerable use of handouts written by the instructor and Web resources that are cited in the handouts. There are numerous videos, most of which are done by the instructor but some are from other sources.

The learning management system (LMS) currently used by the university is Canvas from Instructure (<http://www.instructure.com/>). Prior to this course redesign the LMS was used extensively by the instructor throughout the face-to-face course to deliver course content, provide online quizzes, and receive submissions from students for assignments. Therefore, the course that was redesigned was not making a major leap from a traditional classroom instruction format but, rather, it was a course already supported extensively by educational technology. Still, there were significant changes made and the remainder of this paper contrasts some "before" and "after" examples.

3. A COURSE MAP

When the instructor attended the Course Development Camp the first activity was developing a course map, which is a best practice in course instructional design (Boettcher & Conrad, 2010; Elbaum, McIntyre, & Smith, 2002; OGrady-Marshall, 2013; Smith, 2008). Mapping the course involves planning the course components as defined by Quality Matters core standards 2 through 6 - defining measurable course and unit learning objectives and aligning the assessments, activities, interactions, and materials to support learners in meeting the learning objectives (MarylandOnline, Inc, 2011). Creating a course map helped the faculty member "see" the course as a whole and ensure greater consistency across the learning modules. Learning objectives within a module are mapped to the overall course objectives to ensure alignment of course components with overall objectives. A well-organized, easily navigable course, with all the components aligned and supporting the learning objectives increases learner self-efficacy, satisfaction, retention, and achievement (Elbaum, et al., 2002; Palloff & Pratt, 2005; Smith, 2008). The module learning objectives and how they are aligned with course objectives, per the course map, were integrated into the course and shared with students from the very beginning of the course.

Appendix A shows the complete matrix of course and module learning objects and a snapshot is shown here in Figure 1.

| Module Learning Objectives * | Course Learning Objectives | | | | | |
|------------------------------|--|---|--|---|--|--|
| | C1. Describe the foundations of systems development, the life cycle and some methodologies for working through the life cycle. | C2. Apply project management steps and techniques for the planning phase of the systems development life cycle. | C3. Apply ways to gather information about requirements using traditional methods and prototyping. | C4. Depict system and user requirements using data and process modeling techniques. | C5. Apply relational database terminology and design concepts. | C6. Create a prototype information system using an SDLC methodology and CASE tool. |
| M1.1 | Describe the evolution of the SDLC. | ✓ | | | | |
| M1.2 | List the phases of the SDLC. | ✓ | | | | |
| M1.3 | Summarize the SDLC activities. | ✓ | ✓ | ✓ | ✓ | |
| M1.4 | Describe different SDLC methodologies. | ✓ | ✓ | ✓ | | ✓ |

Figure 1 Course Map (partial view)

4. COURSE OVERVIEW & INTRODUCTION

Homepage

The Course Overview and Introduction standard addresses whether the course structure is made clear to students right away. Are instructions clear about how to start and where to find course components? Is sufficient information about the course provided to the student through the syllabus and other documents? Does the instructor introduce himself/herself and do students introduce themselves? Figures 2 and 3 show the original course homepage, first without comments and then with comments to highlight certain items. Figures 4 and 5 show the redesigned homepage. (Appendix B has many of the screen shots in a larger format.)

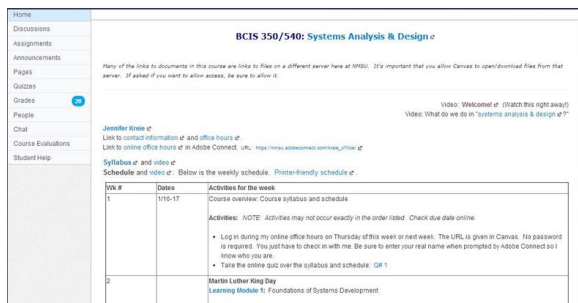


Figure 2 Original or Before QM

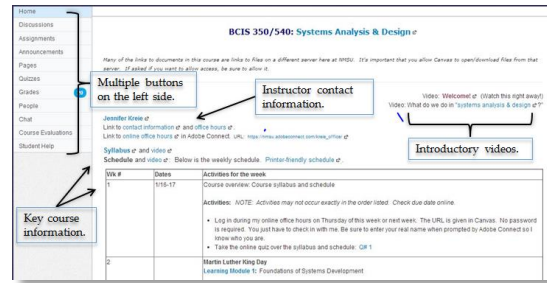


Figure 3 Original or Before QM

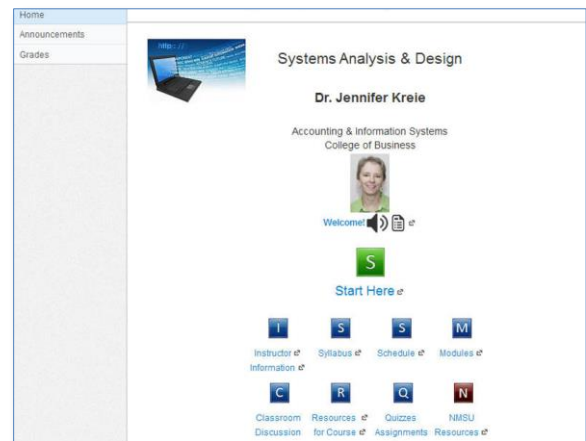


Figure 4 Redesigned or After QM

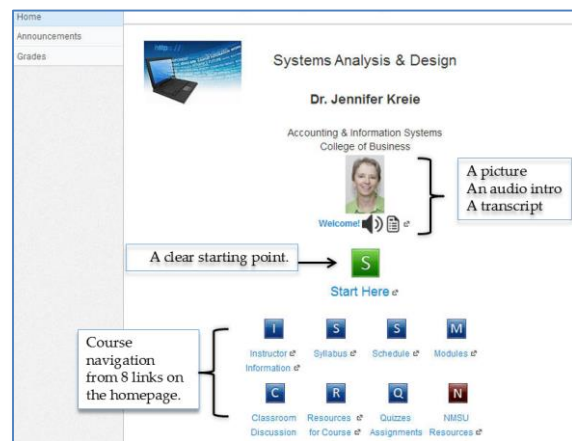


Figure 5 Redesigned or After QM

The original page is obviously more text-based and the new page more graphical but this was a design preference of the instructor, not something prescribed by QM. Many QM recognized courses have more text on the course homepage than this example has. In fact, it is important to point out that no design template is presented by QM as the ideal or one and only way. The QM standards guide course design but there are myriad ways the standards can be met.

The instructor believed all the key information about the course was available on the original homepage but was not confident that students looked at it all. The redesigned homepage has a clearly identified starting point for students, which addresses QM Standard 1.1. The transcript for the course recorded welcome addresses another standard: accessibility (QM Standard 8.2). Plus, the audio message in combination with the instructor picture establishes a welcoming instructor presence (Boettcher & Conrad, 2010). Instructor presence is very important, because active instructor participation in the course impacts students' persistence, performance, and satisfaction in online courses (Boettcher & Conrad, 2010; Palloff & Pratt, 2005; Picciano, 2002).

Start Here

The "Start Here" button on the homepage opens an entirely new page in the course. Figure 6 shows a portion of this page. The "Getting Started" page tells the student about several things:

- the relationship between each module's learning objectives and the overall course objectives,
- the navigation guide for the course (a video and transcript),
- the importance of immediately reading the syllabus and schedule, and
- the community of students in the course via self-introduction in an assigned discussion.

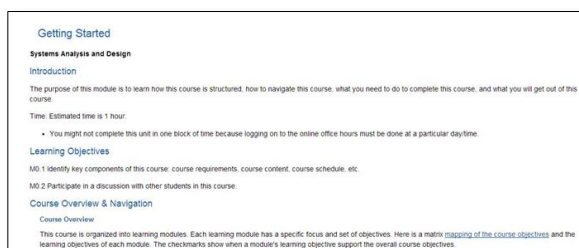


Figure 6 Getting Started

Learning Objectives Mapping

The course map shown in Figure 1 is given to students in the "Start Here" page. This summary of course and module learning objectives helps students understand what they will learn and how each learning module relates to the course's overall objectives.

The "Getting Started" page tells the student to read the syllabus and schedule and an assessment of this required activity is done via a scored quiz. The syllabus, which has a hyperlink on the "Getting Started" and course homepage,

is lengthy. In the past it has been three to four pages but it is even longer in the redesigned version (approximately 8 pages). Some new sections were added and some existing sections were expanded. Figure 7 shows a partial view of the redesigned syllabus.

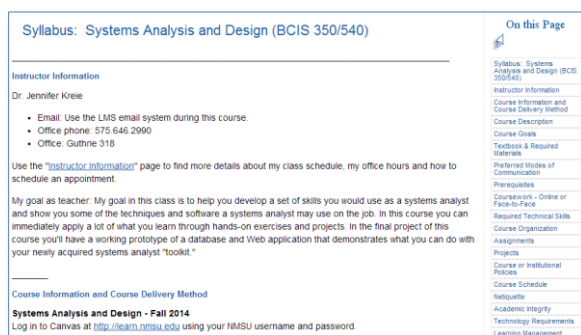


Figure 7 Syllabus

Figure 8 shows an activity on the "Getting Started" page that supports the QM standard of learner interaction and engagement. Students are told to introduce themselves to others in the class and there is a link to the discussion topic for this activity.

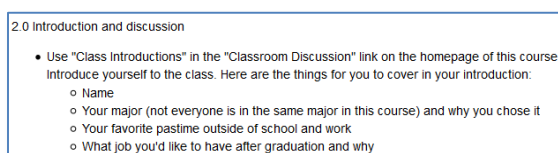


Figure 8 Introduction activity

Software Tool

As a technical side note about the redesign, the instructor decided to use SoftChalk Create (2014) to create most of the web pages with course content. SoftChalk Create is authoring software for creating learning content and Figure 7 above shows the standard browser display based on a template chosen by the instructor. There is a right-side navigation pane that presents quick links to sections of the page (HTML anchors based on text tagged as a heading) so that a lengthy page, such as the syllabus, is easier to navigate. Also, there is a "print all" option that omits the navigation pane when the page is printed.

After working with SoftChalk the instructor decided to flatten the hierarchy of web pages used to deliver course content. For example, the Planning module in the original course design had a top-level page that branched to two sub-content pages. In the redesign there is

one, longer page and the navigation panel on the right side highlights the subsections of the page.

Except for a few completely new pages added during the redesign, the course content pages were not built from scratch. Content from pages in the previous version of the course were moved to the SoftChalk template using copy/paste then editing was done, as needed, to follow the QM standards.

5. LEARNING OBJECTIVES

For the instructor the QM guidelines for learning objectives was challenging because the QM Program stipulates that objectives must be measurable. In the original course the instructor already had course objectives listed in the syllabus and objectives for each module in the course but they did not meet the QM Program's learning objectives standard of measurability. All of the objectives from the original course were revised to use more appropriate wording. For example, a previous course objective said "The student will know traditional analysis and design techniques for data and process modeling." This was changed to "Depict system and user requirements using data and process modeling techniques. In general, words such as "know" and "learn" are replaced with action verbs such as "describe" and "depict." The instructor often referred to a verb wheel based on Bloom's taxonomy of learning (http://en.wikipedia.org/wiki/Bloom%27s_taxonomy).

Figure 9 shows the original Planning module with its list of "what you will learn" contrasted with the redesigned page in Figure 10.

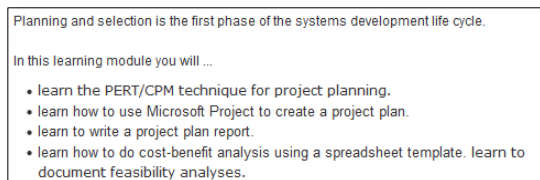


Figure 9 Previous objectives

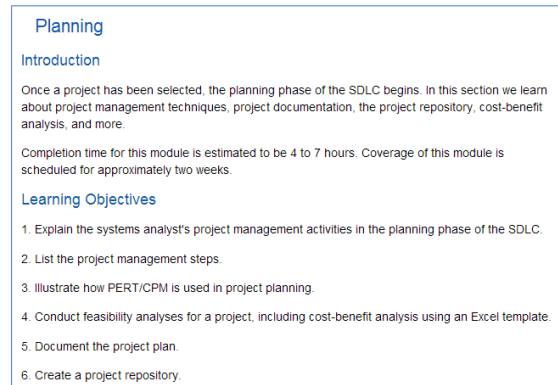


Figure 10 Revised objectives

As mentioned earlier in the section about the course map, it is a key principle of QM to align learning objectives within a course component/module to the overall course objectives (Quality Matters Program, 2013). Thus in each module there should be materials (textbook readings, handouts, videos, activities, technology, and assessments) that teach to these objectives and assignments and activities for the student to demonstrate that each learning objective is met. For example, an activity for objectives 1 and 2 shown in Figure 10 might be a matching question in a quiz that lists project management steps and their definitions and/or there might be some fill-in-the-blank questions for definitions. Objective 3 could have corresponding activities in which the student completes a set of PERT/CPM problems. The other objectives would have similar activities and assignments.

6. LEARNER SUPPORT

The Learner Support QM standard had been partially addressed in the original course through the syllabus. The redesigned syllabus has more content about learner support and a university resource page was added that has a compendium of resources available to students through the university. This university resource page has sections for technical support, academic support, student services and career services. Within each section there is information and links to appropriate university Web pages. Figure 11 shows a portion of the resource page.

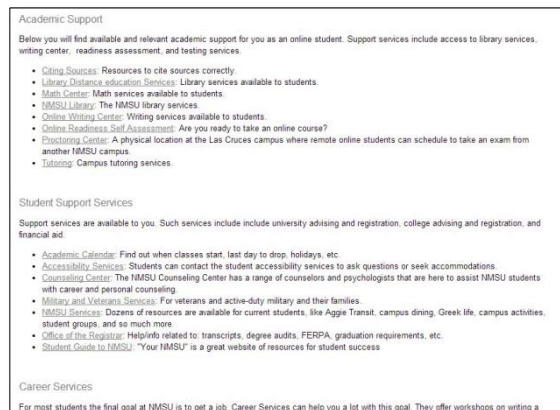


Figure 11 Resources for student

As a technical side note, the list of resources is pertinent to any course so the instructor has each course's homepage link to the same university resources page. This avoids duplicating information in each class and having multiple pages to update when information changes. The same one-central-page design was used for the instructor information, including contact information, office hours, etc. The instructor's personal introduction (video and transcript) is generic and gives general information about the instructor's education and professional experience but does not talk about a particular course. Each course homepage has a short "welcome" recording from the instructor about that particular course.

7. ACCESSIBILITY

Both the Canvas LMS and SoftChalk provide many accessibility features but the instructor still had to make some changes to improve accessibility. The first example is on the course's new homepage. There is text that says "welcome" next to a speaker icon. Both the text and speaker are hyperlinks to a short recorded welcome to the course. The original course had something similar but the new design make the welcome message more visible and pays more attention to accessibility by also providing a text file of the recording content.

Another example of improved accessibility is the introduction to course navigation, as shown in Figure 12. This is found on the "Getting Started" page. There is a video and a transcript of the video that describe how to navigate to the major course components.

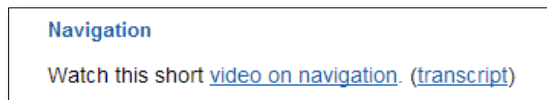


Figure 12 Navigation guidance

8. STUDENT FEEDBACK

A survey was given to students in the 7th week of the semester when the redesigned course was first used. There were 28 students registered at the beginning of the semester. four withdrew quite early in the semester and this is not typical for this course in semesters prior to it being offered online. In the two semesters teaching this course online the instructor saw a higher rate of dropouts and earlier in the online course offering than occurred in past years for the face-to-face class. Twenty-seven students enrolled in the redesigned, online course. Four students withdrew fairly quickly and two stopped participating in the course but never officially withdrew. Twenty-two students took the survey. Responses were anonymous but students were given a small extra credit incentive to complete the survey.

First, survey respondents were asked a couple of background questions. Ninety-one percent of the students have taken at least one other online course prior to this one and 73% have taken four or more courses online. Thirty-two percent said they took this online offering for the convenience.

Table 1 summarizes the responses of students about the course.

9. CONCLUSIONS

The course redesign based on the QM Program standards resulted in several significant changes to the presentation of the course. Although it was time consuming and challenging, creating a course map was a very important first step in redesigning the course for improved quality. The instructor spent considerable time within a module making sure readings, assignments and other activities were clearly aligned with at least one module learning objective. Though the majority of the subject matter did not change, there were some modifications made in how the material is presented and the activities that students complete.

The course overview and introduction given to students was the most visible and time-consuming part of the redesign and this is

something other faculty have also experienced (Finley, 2012; Benton & White, 2010). New pages were added and the presentation of information was significantly modified. Initially, the instructor expected to complete the entire course redesign in two weeks but that amount of time was spent on the mapping of course objectives and the introduction material for students.

Another change was to promote more student-to-student interaction. Student-to-student interaction is one of the seven principles of good undergraduate teaching (Loafman & Altman, 2014; Puzziferro & Shelton, 2008; Dayton et al. 2007) and research has shown it has a positive correlation with student learning (Duncan, Kenworthy & McNamara, 2012). This course needed more interaction activities between students and this was done through graded discussions. For example, within the first week of the course students had to introduce themselves in a discussion posting (guidelines were provided) and they had to respond in a meaningful way to at least one other student's introduction.

During the redesign process the instructor made use of a valuable resource provided by the university—the Instructional Innovation and Quality (IIQ) staff. IIQ offers help to faculty in many ways: workshops, templates, examples of QM recognized courses and individual assistance. Many universities offer similar resources to faculty that want to transition a course from face-to-face to online or improve an existing online course.

The instructor does not plan to change the course in any significant way when it is taught in a traditional classroom setting. As Duncan et al. noted (2007), the design process may not be truly different for either format. Principles for good undergraduate teaching apply in either delivery mode. The instructor believes the new course design will support the "flipped class" approach for the classroom-based setting in which students study course content outside of class and attend class for more active learning, guidance and interaction rather than lecture.

This new design will be used in the coming fall semester. Input from students will be solicited during and at the end of the course. After one semester of use and, probably, modifications, the instructor plans to submit the course for QM review and possible QM recognition.

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APPENDIX A

Learning Objectives Matrix

| A Matrix of Course and Module Learning Objectives | | | | | | | |
|---|---|--|---|--|---|--|--|
| Module Learning Objectives * | | Course Learning Objectives | | | | | |
| | | C1. Describe the foundations of systems development, the life cycle and some methodologies for working through the life cycle. | C2. Apply project management steps and techniques for the planning phase of the systems development life cycle. | C3. Apply ways to gather information about requirements using traditional methods and prototyping. | C4. Depict system and user requirements using data and process modeling techniques. | C5. Apply relational database terminology and design concepts. | C6. Create a prototype information system using an SDLC methodology and CASE tool. |
| M1.1 | Describe the evolution of the SDLC. | ✓ | | | | | |
| M1.2 | List the phases of the SDLC. | ✓ | | | | | |
| M1.3 | Summarize the SDLC activities. | ✓ | ✓ | ✓ | ✓ | | |
| M1.4 | Describe different SDLC methodologies. | ✓ | ✓ | ✓ | | | ✓ |
| M2.1 | Explain the systems analyst role in the planning phase. | | ✓ | | | | |
| M2.2 | List the project management steps. | | ✓ | | | | |
| M2.3 | Illustrate PERT/CPM's used in project planning. | ✓ | ✓ | | | | |

| | | | | | | | |
|------|--|---|---|---|---|---|---|
| M2.4 | Conduct feasibility analyses for a project. | | ✓ | | | | |
| M2.5 | Create project planning documents. | ✓ | ✓ | | | | |
| M2.6 | Create a project repository. | | ✓ | | | | |
| M3.1 | Apply different information gathering methods. | | | ✓ | | | |
| M3.2 | Describe guidelines for conducting a meeting. | | | ✓ | | | |
| M3.3 | Construct process models. | | | | ✓ | | |
| M3.4 | Construct a data model. | | | | ✓ | ✓ | |
| M4.1 | Implement data and process models. | | | | | ✓ | ✓ |
| M4.2 | Use a CASE tool to build a database and Web application. | | | | ✓ | ✓ | ✓ |
| M4.3 | Interpret existing project documentation. | | | | ✓ | ✓ | ✓ |
| M5.1 | Create a working prototype. | | | | | ✓ | ✓ |
| M5.2 | Post a project | | ✓ | | | | ✓ |

| | | | | | | | |
|------|---|---|---|---|---|---|---|
| | web site. | | | | | | |
| M5.3 | Plan a project. | ✓ | ✓ | | | | ✓ |
| M6.1 | Gather information. | | | ✓ | | | ✓ |
| M6.2 | Create models. | | | | ✓ | ✓ | ✓ |
| M6.3 | Design and build Web application prototype. | | | | | ✓ | ✓ |

APPENDIX B

Course Homepage Comparison (Figures 2-5)

Before

| Wk # | Dates | Activities for the week |
|------|---------|---|
| 1 | 1/16-17 | <p>Course overview. Course syllabus and schedule</p> <p>Activities: <i>NOTE: Activities may not occur exactly in the order listed. Check due date online.</i></p> <ul style="list-style-type: none"> Log in during my online office hours on Thursday of this week or next week. The URL is given in Canvas. No password is required. You just have to check in with me. Be sure to enter your real name when prompted by Adobe Connect so I know who you are. Take the online quiz over the syllabus and schedule: Q# 1 |
| 2 | | <p>Martin Luther King Day</p> <p>Learning Module 1: Foundations of Systems Development</p> <p>Activities:</p> <ul style="list-style-type: none"> Complete readings and videos. Take the online quiz: Q# 2 |

After

New "Getting Started" Page (Figure 6)

Getting Started

Systems Analysis and Design

Introduction

The purpose of this module is to learn how this course is structured, how to navigate this course, what you need to do to complete this course, and what you will get out of this course.

Time: Estimated time is 1 hour.

- You might not complete this unit in one block of time because logging on to the online office hours must be done at a particular day/time.

Learning Objectives

MO.1 Identify key components of this course: course requirements, course content, course schedule, etc.

MO.2 Participate in a discussion with other students in this course.

Course Overview & Navigation

Course Overview

This course is organized into learning modules. Each learning module has a specific focus and set of objectives. Here is a matrix [mapping of the course objectives](#) and the learning objectives of each module. The checkmarks show when a module's learning objective support the overall course objectives.

Portion of the Syllabus Page (Figure 7)

Syllabus: Systems Analysis and Design (BCIS 350/540)

Instructor Information

Dr. Jennifer Kreie

- Email: Use the LMS email system during this course.
- Office phone: 575.646.2990
- Office: Guthrie 318

Use the "[Instructor Information](#)" page to find more details about my class schedule, my office hours and how to schedule an appointment.

My goal as teacher: My goal in this class is to help you develop a set of skills you would use as a systems analyst and show you some of the techniques and software a systems analyst may use on the job. In this course you can immediately apply a lot of what you learn through hands-on exercises and projects. In the final project of this course you'll have a working prototype of a database and Web application that demonstrates what you can do with your newly acquired systems analyst "toolkit."

Course Information and Course Delivery Method

Systems Analysis and Design - Fall 2014
Log in to Canvas at <http://learn.nmsu.edu> using your NMSU username and password.

On this Page

- Syllabus: Systems Analysis and Design (BCIS 350/540)
- Instructor Information
- Course Information and Course Delivery Method
- Course Description
- Course Goals
- Textbook & Required Materials
- Preferred Modes of Communication
- Prerequisites
- Coursework - Online or Face-to-Face
- Required Technical Skills
- Course Organization
- Assignments
- Projects
- Course or Institutional Policies
- Course Schedule
- Netiquette
- Academic Integrity
- Technology Requirements
- Learning Management

Learning Objectives Examples (Figures 9 and 10) The Planning Learning Module

Before redesign

Planning and selection is the first phase of the systems development life cycle.

In this learning module you will ...

- learn the PERT/CPM technique for project planning.
- learn how to use Microsoft Project to create a project plan.
- learn to write a project plan report.
- learn how to do cost-benefit analysis using a spreadsheet template. learn to document feasibility analyses.

After redesign

Planning

Introduction

Once a project has been selected, the planning phase of the SDLC begins. In this section we learn about project management techniques, project documentation, the project repository, cost-benefit analysis, and more.

Completion time for this module is estimated to be 4 to 7 hours. Coverage of this module is scheduled for approximately two weeks.

Learning Objectives

1. Explain the systems analyst's project management activities in the planning phase of the SDLC.
2. List the project management steps.
3. Illustrate how PERT/CPM is used in project planning.
4. Conduct feasibility analyses for a project, including cost-benefit analysis using an Excel template.
5. Document the project plan.
6. Create a project repository.

Portion of University Resources Page (Figure 11)

Academic Support

Below you will find available and relevant academic support for you as an online student. Support services include access to library services, writing center, readiness assessment, and testing services.

- [Citing Sources](#): Resources to cite sources correctly.
- [Library Distance education Services](#): Library services available to students.
- [Math Center](#): Math services available to students.
- [NMSU Library](#): The NMSU library services.
- [Online Writing Center](#): Writing services available to students.
- [Online Readiness Self Assessment](#): Are you ready to take an online course?
- [Proctoring Center](#): A physical location at the Las Cruces campus where remote online students can schedule to take an exam from another NMSU campus.
- [Tutoring](#): Campus tutoring services.

Student Support Services

Support services are available to you. Such services include university advising and registration, college advising and registration, and financial aid.

- [Academic Calendar](#): Find out when classes start, last day to drop, holidays, etc.
- [Accessibility Services](#): Students can contact the student accessibility services to ask questions or seek accommodations.
- [Counseling Center](#): The NMSU Counseling Center has a range of counselors and psychologists that are here to assist NMSU students with career and personal counseling.
- [Military and Veterans Services](#): For veterans and active-duty military and their families.
- [NMSU Services](#): Dozens of resources are available for current students, like Aggie Transit, campus dining, Greek life, campus activities, student groups, and so much more.
- [Office of the Registrar](#): Help/info related to: transcripts, degree audits, FERPA, graduation requirements, etc.
- [Student Guide to NMSU](#): "Your NMSU" is a great website of resources for student success.

Career Services

For most students the final goal at NMSU is to get a job. Career Services can help you a lot with this goal. They offer workshops on writing a