ON-LINE COURSE TRANSITIONING PROCESSES, CHALLENGES AND REWARDS FOR COLLEGE GRADUATES WITHIN A BACHELOR OF TECHNOLOGY PROGRAM

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BACHELOR OF TECHNOLOGY PROGRAMS

Direct Entry Program

- Automotive and Vehicle Technology
- Biotechnology
- Process Automation Technology

Degree Completion Program

- Civil Engineering Infrastructure Technology
- Software Engineering Technology
- Energy Engineering Technologies
- Manufacturing Engineering Technology

Face-to-face	**The time honoured and tested method of teaching employed (typically lecturing) across the millennia for conferring knowledge from master to student; the traditional way to teach**
Blended	Courses where some proportion of the content is posted for student access and review to complement traditional face-to-face instruction
Hybrid	Courses where there may be some element of face-to-face along with electronic, online delivery of content to students
Synchronous	Courses that possess a component where instructors and students periodically meet online in a flipped classroom format to discuss content, processual issues, deal with problems, consider examples, solve problems and 'play' games/simulations to reinforce learning with the expectation exists for students to have reviewed the material coming under online discussion prior to class
Asynchronous	Courses where instructional content is posted onto an LMS for student access with no face-to-face contact with an instructor where contact is limited to announcement postings, discussion boards, email, and assignment feedback
Online	Courses where there is no live instructor contact although some institutions make clear that initial orientation session, mid term/final and perhaps student presentations may be face-to-face; contact with the instructor is through online, internet delivered electronic content
Web enhanced learning	Courses that likely have a learning management system for students to access course materials and there may be some instructional activities online, but these supplement but do not replace face-to-face coursework
Web Conferencing	A course where there may be a live face-to-face class along with a simulcast of the emerging lecture to a distant and remote cohort of student

Goals of The On-line Program

B.Tech Software Engineering Technology

- Increase the out reach of the program
- Increase engagement of students in the learning process
- To Meet the McMaster Degree Level Expectations
  - B.Tech. program level outcomes (PLOs)
  - B.Tech. course level outcomes(CLO's)

- Software Engineering Program
  - 18 technical Courses
    - Programming, Data Structures, Software Architecture, Testing, Requirements & Design, Operating Systems, Computer Architecture, Networking, Security and Wireless, Data Mining , Parallel Programming, Maths & Statistics, Real-Time Systems, and Senior Engineering Project
  - 7 Management Courses

- Management Courses
  - Engineering Economics
  - Entrepreneurship
  - Financial Systems
  - Management Principles
  - Project Management
  - Two Eelectives

On-Line Course development Process – Seven Step Process (1)

- **Write course development proposal, including statement of design intent;**
- **Attend initial meetings with MIIETL staff to set up guidelines and schedules for the preparation of material for online delivery;**
- **Preparation of scripts for videos for each week of the asynchronous and synchronous delivery part of the online session;**
- **Obtain feedback from the MIIETL staff and the Chair of your program;**

On-Line Course development Process (2)

- **Revise scripts; record the weekly scripts in an appropriate studio;**
- **Review and revise the videos as required;**
- **Populate the Avenue-to-Learn website with appropriate assignments and activities, on-line tests and quizzes as stipulated in the course outline to assess learning outcomes, and other support material for the course under development.**

Guidelines for Developing On-Line Modules/Course

1. List the main learning outcome
    a. List sub learning outcomes or sub topics
2. Learning material (Asynchronous Mode)
    a. Videos
    b. Reading material
    c. PPTs
    d. Interactive learning material (if any)
3. Support Material (two types: one for reinforcing prerequisite material and additional relevant material)
    a. Links
    b. PPTs
    c. Papers
    d. Any other piece
4. Self-Assessment Tools & Exercise
5. Interaction, Engagement and Discussion (Synchronous Mode)
6. Learning Outcome Assessment Tools (must be linked with the learning outcomes)
    a. Tests
    b. Quiz
    c. Assignment
    d. Group Work
    e. Presentation
    f. Discussions
7. Feedback on the learning outcome and module
    a. Instructor
    b. Student

- Current Status-Technical Courses
  - Software Testing
  - Parallel Programming
  - Data Structures and Algorithms
  - Data Mining
  - Computer Security
  - Software Requirements and Specifications
  - Operating Systems
  - Computer Architecture
  - Wireless Networking

- Real-Time Systems
- Statistics
- Math V
- Discrete Math
- Fundamentals of Networking
- Software Architecture
- Fundamentals of Programming
- Senior Engineering Project

- Current Status-Management Courses
  - MANAGEMENT PRINCIPLES (YES)
  - Engineering Economics (Being Developed)
  - TECHNOLOGICAL ENTREPRENEURSHIP (YES)
  - THE MANAGEMENT OF TECHNICAL PROJECTS (YES)
  - TECHNOLOGY STRATEGY (Being Developed)
  - FINANCIAL SYSTEMS FOR TECHNOLOGY ORGANIZATIONS (YES)
  - CREATIVITY, INNOVATION AND TECHNOLOGY(YES)
  - SUSTAINABILIY AND ETHICS(YES)

PEDAGOGICAL CHALLENGES

- Two perspectives:
  - Faculty
  - Students

THREE ISSUES:

- Design
- Delivery
- Evaluation

DESIGN (instructor)

1. Set out Learning Outcomes
2. Translating F-2-F delivery to full online
3. Basic LMS structure
4. Designing for currency
5. Handling of projects
6. Presentations
7. Testing

SOLUTIONS

1. LO's built into design
2. Think asynch content & synchronous/engagement
3. Structure
4. Thematic modules, no text
5. D2L student online BBC room; scope done online
6. Online, F-2-F, iPhone video
7. LMS delivers quizzes; M/T & final on site

DELIVERY (instructor)

1. Online engagement
2. Keep on task
3. Flipped classroom
4. Equations/math
5. Technology disappoints

SOLUTIONS

1. Chat, talk, call on, break out rooms
2. LMS delivered quizzes by module/chapter, DBoard
3. Quiz asynch. content; ‘teach’ something
4. Smartboard, animations, premade slides, Wacom
5. Workarounds, internet speed, 12/5 tech support

EVALUATION (instructor)	SOLUTIONS
1. Academic integrity	1. Test on site; take home; present on site
2. Volume/class sizes	2. Peer evaluation, LMS administered quizzes

STUDENT ISSUES	SOLUTIONS
1. Feelings of isolation	1. Group work
2. Attachment to course, institution	2. Meet once on site, video stream self, fast personalized e responses
3. “doesn’t teach me”	3. ‘teach’ something in traditional way + synchr.
4. “boring to sit on line”	4. Variety, break out rooms, involve in conversation

Summary

1. Designed , Developed and Delivered 8 On-Line, 8 Under Development
2. Goal is to complete B.Tech Software Engineering Technology Fully On-Line by Sept 2018
3. Collaborative Development Process and Portal Structure is Well Defined and Developed
4. Different Courses Require Different Strategy
5. Student Engagement and Reaching Out Is A Continuous Improvement Process

Thank you,

Any Questions