Massive Open Online Course: Design and Implementation

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DIPLOMA

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PROGRAM CATEGORIES

D.E.L.E.D & BRIDGE COURSE
F. No. 8-1/2015-TEL
Government of India
Ministry of Human Resource Development
Department of Higher Education
(TEL Division)

216-D Shastri Bhawan
New Delhi, dated 11.03.2016

Subject: Guidelines for Development and Implementation of Massive Open Online Courses (MOOCs) – reg.

The undersigned is directed to enclose herewith a copy of Guidelines for Development and Implementation of Massive Open Online Courses (MOOCs) for information & necessary action.

(K. D. Verma)
Under Secretary (TEL)
TEL No. 011-23073562

To,
1. Prof. Ved Prakash, Chairman, University Grants Commission (UGC)
2. Prof. Bhaskar Ramamurthi, Director, IIT Madras.
3. Prof. Rajbir Singh, Director, Consortium for Educational Communication (CEC)
4. Prof. Nageshwar Rao, Vice-Chancellor (II) & PVC, IGNOU, New Delhi
5. Dr. Hrushikesh Senapati, Director, NCERT
6. Prof. Chandra Bhushan Sharma, Chairman, National Institute of Open Schooling (NIOS)

Copy to:-
1. Sr. PPS to Secretary (HE), M/o HRD
2. Sr. PPS to Additional Secretary (TE), M/o HRD
3. PPS to JS & FA, M/o HRD
4. PS to Director (TE), M/o HRD
5. PS to DG (ICT), M/o HRD
6. Sri Pradeep Kaul, Sr. Consultant, NMEICT, M/o HRD
F.No. 8-1/2015-TEL
Government of India
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TEL No. 011-23073582
Four quadrant approach

- The four Quadrant approach means e-learning system that has the following components:
  - Quadrant-I is e-Tutorial; which shall contain: Video and Audio Content in an organized form, Animation, Simulations, video demonstrations, Virtual Labs, etc, along with the transcription of the video.
  - Quadrant-II is e-Content; which shall contain; self instructional material, e-Books, illustrations, case studies, presentations etc, and also contain Web Resources such as further references, Related Links, Open source Content on Internet, Video, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.
Four quadrant approach

– Quadrant-III is the Discussion forum for raising of doubts and clarifying them on a near real time basis by the Course Coordinator or his team.

– Quadrant-IV is Assessment, which shall contain; Problems and Solutions, which could be in the form of Multiple Choice Questions, Fill in the blanks, Matching Questions, Short Answer Questions, Long Answer Questions, Quizzes, Assignments and solutions, Discussion forum topics and setting up the FAQs, Clarifications on general misconceptions.
Content

• The SWAYAM shall cover the following:
  – a) Curriculum based course contents covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture etc. in higher education domain (all courses to be certification-ready).
  – b) School education (9-12 levels) modules; for teacher training as well as teaching and learning aids to learners to help them understand the subjects better and also to help them in better preparedness for competitive examinations for admissions to professional degree programmes.
  – c) Skill based courses, which cover both post-higher secondary school skills that are presently the domain of polytechnics as well as industrial skills certified by the sector skill councils of various Ministries.
Content

• The SWAYAM shall cover the following:
  – d) Advanced curriculum and professional certification under a unified scheme in higher education domain that can be tailored to meet the demands of Choice Based Credit System (CBCS) currently being implemented in India at under graduate level.
  – e) Curricula and courses that can meet the needs of life-long learners
  – f) Independent courses which may not be part of any set curriculum and may be taught as awareness courses, continuing education programme and for training of specific skill sets.
Proposal for MOOC

• The Course Coordinator will prepare a proposal for MOOC:
  – i. Introductory module: Defining the Course design, qualifications for taking the course, introductory video, assessment system, credits to be awarded, starting date/ending date, and expected outcomes.
  – ii. Scheduling of course: lectures / reading material / assignments / quizzes/test into weeks and short modules.
  – iii. Instructional videos to be prepared – along with the transcript, multimedia techniques to be used, and the name of the teacher-on-the-camera.
  – iv. Details of reading material such as lecture notes / additional readings to be provided.
  – v. Self-assessment modules: The total number of quizzes and assignments to be provided for the course.
Proposal for MOOC

- v. Self-assessment modules: The total number of quizzes and assignments to be provided for the course.
- vi. Assessment system: Weekly/biweekly assessments and assignments that would be required to be taken by the students.
- vii. Reading material: Notes/extra readings.
- ix. Assessment system: Weekly assessments and assignments.
- x. Discussion forum: List of Teaching Assistants for handling the discussion forum and answering queries raised by registered Students.
WELCOME TO SWAYAM

SWAYAM is an instrument for self-actualisation providing opportunities for a life-long learning. Here learner can choose from hundreds of courses, virtually every course that is taught at the university / college / school level and these shall be offered by best of the teachers in India and elsewhere. If a student is studying in any college, he/she can transfer the credits earned by taking these courses into their academic record. If you are, working or not working, in school or out of school, SWAYAM presents a unique educational opportunity to expand the horizons of knowledge. More...

NATIONAL COORDINATOR

Design a course  Are you a teacher? Do you want to design a course on SWAYAM?

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Download SWAYAM applications from popular app stores

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Duration

• Duration of content: A four-credit course may have overall duration of about 20 hours of video lectures and reading Module (a course may have upto 40 Modules).
Presentation techniques

• The production of programme may be done in a manner that a substantial part that at least 75% of the total duration of each production should use innovative learning techniques viz. case-studies, scenarios, animation, analogies, individual or group activities, concept-mapping, in-text learning quizzes, interactive exercises within learning modules, discussion forum, multi-media techniques, innovative graphics, live experiments, demonstrations, role-plays, field documentaries etc.
Presentation techniques

• Whereas direct lecture focused on the teacher can be used, it may be kept for less than 15% of the total duration of video. Even in this case, the teacher should speak extempore and should not read from written material or even a Teleprompter. It should be ensured that the teacher before the camera is presentable as per television practices.
Technical specification for content development

**Block Diagram**

- **Camera/Multi Camera with Tripod**
  - SDI OUT

- **Interactive Panel with Computer**
  - SDI OUT

- **Wacom Tablet with Computer**
  - HDMI OUT

- **Vision Mixer/Switch**

- **NLE Setup with Capture Card**

- **Audio Mixer**

Or

**Camera/Multi Camera with Tripod**

**Interactive Panel with Computer**

**Wacom Tablet with Computer**
Technical specification for content development

Three 1/3" type; Full HD CMOS sensors; PAL color; 1920x1080/50i; Gross Pixels ≥ 2.2 Million; camera to have a resolution of ≥ 850 TVL; Sensitivity: ≥ F10; S/N 54 db; Motorized Zoom Lens>20X (28 mm to 560mm) with optical image stabilization; Proxy Video; Aspect Ratio 16:9; Audio: AAC 2ch, 16bit, 48kHz; Multi-Camera Synchronizing with Genlock IN and TC IN/OUT; HD Recording ≥ 50 Mbps, should also support Intra / LONG GOP recording. Two or more Memory Card/Media Slots, Hot Swap for Continuous Recoding, with content security features. To support AVC H.264/MPEG4, MOV Files / Quick Time; Video out: SDI & HDMI.
Technical specification for content development

• Editing Software: Adobe Creative Cloud for Teams
• Hardware:
  – Windows 10 Professional 64bit OS
  – 1TB 7200 RPM SATA 1st Hard Drive
  – 500GB 7200 RPM SATA 2nd Hard Drive
  – USB Keyboard
  – USB Optical Mouse
  – SuperMulti DVDRW SATA 1st
  – NVIDIA Quadro GPU (K4000 or better)
  – Dual Xenon Processor Air Cooling Kit (E5-2620 v2 2.10Ghz 15MB 1600 6C 1st CPU)
  – 32GB DDR3-1866 (8x4GB) 2CPU Unbuffered RAM
  – 21” Monitor (1920 X 1080).
Technical specification for content development

• Interactive 27” Multi Touch Display & Pen: Resolution >5000 lpi; Having >2000 pressure levels, widescreen 16:9 display; resolution of 2560 x 1440; Using Adobe RGB; 1.07 billion colors; Works with Photoshop® and Adobe® Illustrator CC; USB-3 & HDMI connectivity to PC & Mac; with features to Brush, Draw, Paint, Image editing, 3D Animation, scroll, zoom and rotate.
Pre-planning Requirements

• Before the MOOC content is created, the following pre-planning steps are critical and must be taken care of:
  – A) Identify the purpose of the course and the target audience.
  – B) Create a timeline with detailed tasks to be accomplished.
  – C) Identify the objectives for offering the course, along with prerequisites.
Features of MOOCs

– D) Determining the optimum time frame for the course, and conceptualizing a course design (such as open, structured, or non-linear) and release format (for example, releasing all the content at launch or releasing it on a week-by-week basis).

– E) Specify broad learning outcomes.

– F) Decide assessment strategy and the level of achievement to be considered acceptable for receiving a course completion certificate.
Core Elements

• Elements for the overall course should include:
  – A) Syllabus Template (including a course description with key learning outcomes, descriptions of faculty, a detailed course content outline, expectations for participation, certification, and faculty communication, netiquette guidelines, and academic integrity).
  – B) Pre- and post-course surveys.
– C) Course overview to orient students on: What is the course about? What does the course include? What will I learn in the course? How do I use the course features?
– D) Course timeline for scheduling learning activities.
– E) List of Announcements to deliver reminders for due dates and course transitions.
– F) Instructions for synchronous and asynchronous engagement.
• Inviting Expression of Interest for Developing MOOCs
### A. Preform for Submitting Expression of Interest for Developing MOOCs

(Please read the instruction manual before filling the form and submit at cec.moscpropos@gmail.com)

<table>
<thead>
<tr>
<th>Field</th>
<th>Instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title of the MOOC</td>
<td></td>
</tr>
<tr>
<td>Knowledge Domain</td>
<td>Refer Annexure-I</td>
</tr>
<tr>
<td>Subject</td>
<td>Refer Annexure-II</td>
</tr>
<tr>
<td>Degree</td>
<td></td>
</tr>
<tr>
<td>Credit/Course</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Title of the Course Coordinator</td>
<td></td>
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<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>Designation</td>
<td></td>
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<td>Mobile No.</td>
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<td>Email</td>
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<tr>
<td>Nature of Employment</td>
<td>Permanent/Temporary</td>
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<td>Affiliating Institution</td>
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<tr>
<td>Name of Institution</td>
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<td>Address</td>
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<td>PIN</td>
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<td>Email</td>
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<td>Name of Institute offering the course</td>
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<tr>
<td>Name of Institution</td>
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<td>Address 1</td>
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<td>Address 2</td>
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<td>PIN</td>
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<td>Email</td>
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</tbody>
</table>

The course title is to give clear indication of content. As per the policy in the CBSC, syllabus:
- It should be of approved curriculum being taught in a School/College/University.
- It should mean a paper which is taught at least one academic term as a separate subject.
- It should be examined in a manner resulting in awarding of credits.

Curriculum based course contents covering diverse disciplines such as arts, science, commerce, performing arts, social sciences and humanities, engineering, technology, law, medicine, agriculture etc. in higher education domain (all courses to be certification-ready).

1. School education (9-12 levels) modules: for teacher training as well as teaching and learning aids to learners to help them understand the subjects better and also to help them in better preparedness for competitive examinations for admissions to professional degree programmes.
2. Post-higher secondary school skills that are presently the domain of polytechnics as well as industrial skills certified by the sector skill councils of various Ministries.
3. Advanced curriculum and professional certification under a unified scheme in higher education domain that can be tailored to meet the demands of Choice Based Credit System (CBCS) currently being implemented in India at undergraduate level.
4. Curriculum and courses that can meet the needs of life-long learners.
5. Independent courses which may not be part of any set curriculum and may be taught as awareness courses, continuing education programmes and for training of specific skill sets.

### B. Detailed MOOC Development Plan

(Submit the form as per the instruction given in respective columns and submit at cec.moscpropos@gmail.com)

<table>
<thead>
<tr>
<th>NO.</th>
<th>DELIVERABLE</th>
<th>DESCRIPTION</th>
<th>REMARKS</th>
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<td>1.0</td>
<td>Course Title</td>
<td>The course title is to give clear indication of content. As per the policy in the CBSC, syllabus:</td>
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<tr>
<td>2.0</td>
<td>Subject</td>
<td></td>
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<tr>
<td>3.0</td>
<td>Course Category</td>
<td>UG, PG, degree, Certificate/Diploma</td>
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<tr>
<td>4.0</td>
<td>Course Description</td>
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<td>5.0</td>
<td>Course Duration</td>
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<td>Course Fee</td>
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<td>7.0</td>
<td>Course Materials</td>
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<td>8.0</td>
<td>Course Evaluation</td>
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<td>9.0</td>
<td>Course Assessment</td>
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</tbody>
</table>

The acceptance of the course shall be in accordance to the NHFID/UGC/CBCS guidelines in force.
### Detailed Course Structure

**Course Title:**
(L level & Subject) Syllabus (based on Choice Based Credit System)

<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Items</th>
<th>Title of Video and Reading text/Lecture/ppt</th>
<th>Remark</th>
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<tbody>
<tr>
<td>First</td>
<td>Day 1</td>
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<td>Fifth</td>
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</table>

Weekly Study Plan Contains .... Videos in a 5 day in a week format
MOOC Production Guidelines at the University of British Columbia

March 27, 2014
This document contains guidelines for producing a MOOC on the Coursera platform.

Centre for Teaching and Learning Technology, University of British Columbia
Creating a MOOC is a team effort involving:

- Instructional Designers
- Subject Matter Experts
- Instructional Technologists
- Web Developers
- Camera Operators
- Sound Technicians
- Video Producers
- Video Editors
- Others
Creating a Schedule

Launch Course

- 6-8 weeks
  Upload all materials to Coursera

- 10 weeks
  Refine Quizzes/Assessments

- 2 to 3 months
  Edit videos and course materials
  Write student instructions

Gather Topics

- 6 months
  Learning Objectives
  Assessment plan

Chunk Materials from Research Discovery

- 4 to 6 months
  Set up AV
  Create scripts and storyboards

Shoot Lecture Videos

- 3 to 4 months
• An effective method of designing (or-redesigning) a course for online consumption is Backwards Design.

• Backwards Design entails identifying the desired results, determining how students will demonstrate knowledge, and planning the learning experiences and instruction.

• A question often asked by instructors is: “how do I get students to absorb materials on their own and to make important conclusions in a more meaningful way?”
• Video content is the most basic learning component of a MOOC
• Chunking videos into approximately 6-12 minute segments is a good strategy to retain viewer interest and to allow for easy retrieval of knowledge in re-screenings.
• As equally important is linking learning objectives and assessment into each of the video segments; you wouldn’t want students to watch videos unless they contained important materials related to their learning outcomes and assessments.
• Try to limit the amount of text you use on screen, use graphics instead of text, and speak about what is written for learners with disabilities.
Building and Executing MOOCs

A practical review of Glasgow’s first two MOOCs
(Massive Open Online Courses)

Mr John Kerr
Dr Suzy Houston
Dr Leah Marks
Ms Athene Richford - Researcher
Phase 1: Developing the MOOCs

Pedagogic and Course Design 4
Use of E-Learning Support Staff 5
Early Course prototypes and Writing the Course 8
The FutureLearn Platform - Getting Started 8
Video Production 9
Equipment used for Right vs Might Videos 10
Social Media 11
Copyright 12
Time dedicated to Copyright and Image Sourcing 14
Accessibility 15
Quality Assurance 17
Staff Training 17

Phase 2: Delivering the MOOCs 19

Discussion Moderation 19
Google Hangouts 21
Student Feedback on Hangouts 24
Ongoing Communication 25
Social Media 27
Technical Support 27
Platform Developments 28

Phase 3: Tracking and Evaluating Student Engagement 29

Demographics 29
Participant Signups 29
Gender Demographics 32
Education Levels 33
Age Range 36
Location 38
Course Completion 38
Statement of Participation 40
Peer Review Process 41
Participant Feedback 43

Phase 4: Evaluating the Staff Experience 44

The Staff Experience 44
Summary 46
<table>
<thead>
<tr>
<th></th>
<th>Right vs Might</th>
<th>Genomics</th>
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<tbody>
<tr>
<td>Academics involved</td>
<td>3</td>
<td>3 core + additional guests</td>
</tr>
<tr>
<td>Number of Weeks</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Assessments</td>
<td>Peer review exercise, producing a government Memo</td>
<td>Peer review exercise 5 quizzes 6 end of week tests</td>
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<tr>
<td>E-learning support</td>
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<td>0</td>
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<tr>
<td>Total number of steps</td>
<td>146</td>
<td>130</td>
</tr>
<tr>
<td>Total number of video clips</td>
<td>37</td>
<td>54</td>
</tr>
<tr>
<td>Average length per clip</td>
<td>4 minutes</td>
<td>6.7 minutes</td>
</tr>
<tr>
<td>Google Hangouts</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>Discussion forums*</td>
<td>39</td>
<td>13</td>
</tr>
<tr>
<td>Social Media</td>
<td>Twitter, Google+, YouTube</td>
<td>Twitter, Google+, YouTube</td>
</tr>
<tr>
<td>GTA Forum moderators</td>
<td>3 (2 hours per moderator per day - 5 days per week)</td>
<td>0 (academics involved moderated the forums)</td>
</tr>
</tbody>
</table>
Storyboard - Drone Strikes week 1

Core doc 1
1.1 FutureLearn welcome video
1.2 Case study welcome video/case study overview (3-6 minutes)
1.3 Introduction video/lecture style (4-7 minutes)
1.4 Document/article/web link/YouTube
1.5 Document/article/web link/YouTube
1.6 Discussion forum
1.7 Document/article/web link/YouTube
1.8 Quiz/test
1.9 Recap video
1.10 Discussion forum Document 1 Summary

Core doc 2
1.11 Introduction video
1.12 Document/article/web link/YouTube
1.13 Poll (bases on above reading)
1.14 Document/article/web link/YouTube
1.15 Lecture style clip
1.16 Document/article/web link/YouTube
1.17 Discussion forum
1.18 Discussion forum
1.19 Recap video
1.20 Introduction Video
1.21 Discussion forum (initial views on topic)
1.22 Lecture style video
1.23 Document/article/web link/YouTube
1.24 Lecture style video
1.25 Discussion forum
1.26 Case study Wrap up video
1.27 Google hangout

Learning Style
Acquisition
Participation