

MOOCs
Massive Open Online Courses
An initiative under National Mission on Education through
Information Communication Technology
(NME-ICT) Programme

**Guidelines
for
Development and Implementation of MOOCs**

***Ministry of Human Resource Development
Department of Higher Education***



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BACKGROUND AND PERSPECTIVE

Whereas, with a view to providing access to the best quality learning resources across the country, the project 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) has been started. SWAYAM provides an integrated platform and portal for online courses, using information and communication technology (ICT) and covering High School till all higher education subjects and skill sector courses to ensure that every student benefits from learning material through ICT. SWAYAM is a:

1. One-stop web and mobile based interactive e-content for all courses from High School to University level.
2. High quality learning experience using multimedia on anytime, anywhere basis.
3. State of the art system that allows easy access, monitoring and certification.
4. Peer group interaction and discussion forum to clarify doubts
5. Hybrid model of delivery that adds to the quality of classroom teaching.

Whereas, SWAYAM involves development of Massive Open Online Courses (MOOCs) compliant e-content (video and text) and building a robust IT platform. These guidelines pertain to the quality of the e-content produced for the SWAYAM.

Whereas, Under NMEICT, NPTEL (a group of 7 IITs and IISc) developed e-content in 23 Disciplines numbering 933 Courses. CEC has so far completed the development of e-content in 29 Undergraduate subjects and shall further be completing e-content in 58 Subjects in four quadrants. UGC is in the process of completing e-content in 77 Post Graduate subjects. Similarly, many other institutions are engaged in development of e-content.

Now, with a view for systematic development of the MOOCs for the SWAYAM, the following guidelines which propose to lay down technical and production standards for the e-content have been issued:

1. DEFINITIONS:

- 1.1. In these guidelines, unless the context otherwise requires, the following words shall have the following definitions:
 - a) 'Course' shall mean a paper, which is taught for at least one semester as a part of a subject/programme.
 - b) '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 organised form, Animation, Simulations, video demonstrations, Virtual Labs, etc.
 - Quadrant-II is e-Content: which shall contain: PDF, Text, e-Books, illustrations, video demonstrations, documents and Interactive simulations wherever required.
 - Quadrant-III is Web Resources: which shall contain: Related Links, Wikipedia Development of Course, Open source Content on Internet, Case Studies, books including e-books, research papers & journals, Anecdotal information, Historical development of the subject, Articles, etc.
 - Quadrant-IV is Self-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.
- c) 'MOOCs': Massive Open Online Courses (MOOCs) are such online courses which are developed as per the pedagogy stated herein and following the four quadrant approach.
- d) 'National Coordinators (NCs)': National Coordinators are the Institutions that have been so designated by the Ministry and assigned with a specific sector to cater to MOOCs.
- e) 'Principal Investigator (PI)': The PI shall be a Subject Matter Expert (SME) belonging to a reputed educational institution, identified and entrusted with the task of developing MOOCs in a given area by the NC.
- f) 'Sector' shall mean a particular level of learning such as high school, engineering/non-engineering diploma/degree/post-graduation.
- g) 'Subject' shall mean a discipline (Example: Physics) taught in an educational institution consisting of specific programme/courses, resulting in the award of a certificate/diploma/degree.

2. NATIONAL COORDINATORS

2.1. The following shall be National Coordinators for each of the Sectors for the purpose of development of the e-content for SWAYAM:

S. No	National MOOCs Co-ordinator	Sectors
1	University Grants Commission (UGC)	Non Technology Post Graduation Degree Programme
2	NPTEL	Technical / Engineering UG & PG degree programme.
3	Consortium for Educational	Non Technology Under Graduation



	Communication	degree programme.
4	IGNOU	Diploma and Certificates
5	CBSE NCERT & NIOS	CBSE and Open Education, classes 9 th to 12 th

3. SCOPE OF SWAYAM

3.1. 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 subjects, engineering, technology, law, medicine, agriculture etc. in higher education domain (all courses would be certification-ready in their detailed offering).
- b) School education (9-12 levels) modules; for teacher training as well as teaching and learning aids to children of India to help them understand the subjects better and also 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.
- 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 undergraduate level.
- e) Curricula and courses that can meet the needs of life-long learners of Indian citizens in India and abroad.

4. AWARDING THE COURSES:

- 4.1. The National Coordinators (NC) shall ensure that work of converting a course into a MOOC shall be done in a comprehensive manner, such that there is complete coverage of all the courses in a subject/programme.
- 4.2. Each course in a subject shall be awarded to a reputed institution (defined as Principal Investigator) in such a way that there shall be no duplication of work.
- 4.3. The institution chosen to convert a course into MOOC (Principal Investigator (PI), shall follow the model curriculum prescribed by the Regulator. However, the curricula should be updated to cover all recent developments in the field, if the model curriculum is more than 5 years old.
- 4.4. The NC shall ensure that the PI engages the best of subject experts in the country.



4.5 'MOOCs National Committees (MNC)' consisting of Technical Experts, Academicians, Administrators etc., shall be constituted by the MHRD. Mission Director, NMEICT, shall chair the MNC. The MNC shall be an arch Committee to oversee the SWAYAM & MOOCs activity under MHRD, it shall be the Monitoring and Implementations Committee, to recommend funding requirement of NCs, approve projects submitted by the National MOOCs Co-ordinators & other PIs for implementation & funding by MHRD, establish & supervise Examination Centres, recommend weightage of MOOCs Courses in the conventional Teaching Programme, including Credit mobility across educational Institutions.

5. PROCESS LEADING TO DEVELOPMENT OF e-CONTENT

- 5.1 The National Coordinator ensures that the best teacher in the Country is selected to work as the 'Principal Investigator' or 'Subject Matter Expert (SME)'.
- 5.2 Each PI/SME will identify his/ her team of teachers with proven abilities and allocate modules to them.
- 5.3 The selected teachers, if necessary, are trained in a Workshop on the modalities and the quality standards for recording, which include:
- a) Defining the Course design, pre-requisites and expected outcomes
 - b) Splitting the course into weeks and short modules
 - c) Preparing quizzes for each lecture for self-testing
 - d) Weekly assessments and assignments
 - e) Discussion forums to answer questions online.
 - f) Practice offering of MOOC for training and course delivery.
- 5.4. The team prepares the content, based on the model curriculum prescribed by the Regulators; updated with the recent developments in the field. In the case of a new course, a team of experts will arrive at a suitable curriculum. This may involve repurposing the e-Content created elsewhere.
- 5.5. Studios are allocated for recording and for creating multimedia for the course. Each module normally takes a week to prepare.
- 5.6. The National Coordinator should put in place a system for pre-viewing the e-content created by experts and stakeholders.

6. TECHNICAL SPECIFICATIONS FOR CONTENT DEVELOPMENT

- 6.1. A SWAYAM Course shall be classified based on number of weeks of engagement and number of hours of video. A Course shall be about 40 Hours of duration that includes about 20 Hours Video and multimedia e-Content deliveries. The production process of content / e-Content development should meet highest industry standards, both in technical and academic terms. All



Implementing Agencies shall therefore ensure that the Technical Guidelines are strictly followed and should use professional equipment, with very good quality cameras and editing units. Following technical guidelines shall be followed:

- a) The content like Assignments, Glossary, downloadable PDFs, and DOCs etc. should be saved in database directly in binary formats. This will add content utility transforming it from static to dynamic for future warehousing purposes. This will facilitate revisions dynamically via database to allow regular updation and help in using the advanced text search engine facilities present in all enterprise level databases.
- b) Content should be developed in an open platform with a combination of HTML 5 + Angular JS based engine template. Animations already created in applications such as Flash need to be imported in the e-Content. Even though animations get created in applications such as Flash they need to be imported in the e-Content.
- c) The Cameras and the Recorder used, shall follow at least the following standards: Three 1/3" type; Full HD CMOS sensors; PAL color, CCIR-B standards; HDTV 1080/50; Gross Pixels > 2 Million; camera to have a resolution of 750 TVL or better; Proxy Video: MPEG-4 AVC/H.264, 3.5 Mbps MP4; Aspect Ratio 16:9; Audio: AAC 2ch, 16bit, 48kHz, HD/Standard Definition DV Recording.

6.2. Editing processes & Standards.

- Video recording format: Full HD 1920x1080 pixels.
- Videos aspect ratio: 16:9 (widescreen).
- Module Delivery: 1920p following MPEG-4 AVC Compression.
- Audio Channel 1 to have Mixed Audio Track.
- Font size: Heading: 24-30; Sub-heading: 22-26; Body: 20-24;
- Full screen Video Frame.
- All graphs and diagrams must have clear font.
- The expert/teacher should speak extempore as delivery made in case of class-room set-up and avoid reading from written material or a Teleprompter.
- Video frame to maintain 6-8% headroom;
- Video quality and Audio levels should be constantly monitored while recording.
- PI should provide two video files, one in raw format and other in compressed format.
- Voice modulation be taken care of and the voice should remain same throughout the video as in a classroom situation. Two voices in the same video for lecture and slides may be avoided. However, video clips or audio clips from eminent experts can be used.

6.3. Utilization of equipment available at institutions.



The video/multimedia produced for the MOOCs shall conform to the Technical standards laid down in the MOOCs Guidelines.

In case the required equipment for such production is not available with the PI's institution, such Institution shall follow the provisions of GFR for hiring suitable agency/equipment.

The cost of hiring the agency/equipment can be met from the funds released under the project. However, no project funds shall be spent for purchase of equipment.

7. RESPONSIBILITIES OF SUBJECT MATTER EXPERT (SME)

7.1. The following shall be the responsibility of the SME:

- SME should provide PPTs of at least 25-35 slides before the recording. Provide relevant images, storyboard, animations, graphics etc., before recording.
- Text files in a Course shall be sufficient to bring in all material required by an average student and shall be around 3000 words for one hour content.
- Instructional designer may also be involved for incorporating multimedia inputs.
- It is not necessary that the teacher in camera be shown thought, however, the teacher in camera may appear upto 25% of the time, rest of the time, the timeline may carry teacher's voice on which graphics, animation, text etc may be inserted.
- Faculty presenting the video should come prepared for recording and speaks slowly on recording; speak extempore like deliveries in a classroom; use of Teleprompter may be avoided; the SME should review the modules before and after recordings.

8. RESPONSIBILITIES OF MULTIMEDIA LAB

8.1. The following activities are to be carried out by the multimedia labs:

- Transform the presentation slides to standard template provided by the MHRD and use standardized fonts, colours, text etc.
- Provide Instructional designing; add general images from stock, graphics, animations etc., (as per the need)
- Should record with high quality (1920X1080) video and excellent quality noise free audio. All the Video's must have 16:9 Aspect Ratio (widescreen).
- Video quality and Audio levels (in 0 db) should be constantly monitored while recording.
- Submission of content in raw as well as compressed file in hard disk is to be provided.



9. REPURPOSING THE E-CONTENT

9.1. All courses from School level to the Post-graduate level created under NMEICT, NIOS, NCERT, UGC etc., in the form of e-Courses with interactive e-Content shall be made available to e-Acharya for use in SWAYAM programme. Available content will need to be repurposed into MOOCs compliant format and hosted on the SWAYAM platform. This will comprise more than 2.5 lakh hours of course content. The repurposing consists of the following:

- a) Adding four Quadrants, and sufficient numbers of auto-graded quizzes, assignment, case studies, field exercises to the e-content already developed under NMEICT.
- b) Indicate the purpose of the course (each paper to be considered as a course) and the target audience.
- c) Indicate the objectives for offering the course along with the pre-requisites for determining eligibility to enroll in the MOOCs course.
- d) Sequencing the modules prepared for a specific paper (course) so that the course flows in a proper order.
- e) Adding a five-minute video by the course coordinator (who may be identified for offering the MOOCs course) to give the course overview, while summarizing the course contents, objectives, pre-requisites and learning outcomes.
- f) Specify broad learning outcomes of the course (paper).
- g) Indicate assessment and evaluation procedure.
- h) Translation of content into regional languages: Efforts shall be made to transcribe videos to enable translation of all text and then dub the voice; in as many Indian languages as possible. For this purpose, the services of Bharatvani, CIIL & other institutions can be used.
- i) The PI may keep discussion forum activities ready to be released at the time of MOOCs launch.

10. FEATURES OF MOOCs COMPLIANT E-CONTENT

10.1. The MOOCs compliant e-Content shall follow a standardized template (which will be provided by the MHRD). Uniform look and feel is required to be followed by all PIs and shall also have instructions on logo etc.

Pre- Planning Requirements

10.2. Before 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 timelines with detailed tasks to be accomplished.



- c) Identify the objectives for offering the course, along with pre requisits.
- 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 examples 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 of a MOOCs

10.3. 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 (week-wise detailed plans)
- e) List of Announcements to deliver reminders for due dates and course transitions.
- f) Instructions on synchronous and asynchronous engagement (prompts for students to post in the Discussion Forum, polling questions throughout the course, interaction with faculty/ TA (eTutor) as per instruction)

10.4. Elements for the course Landing Page must include the following:

- a) Welcome text and video from lead faculty,
- b) Faculty/ TA (eTutor) details (brief CV and contact details),
- c) Links to course surveys,
- d) Guidance on how to get started as a student in the course,
- e) Handouts section including syllabus and learning checklist,
- f) Course Timeline.

Section-level Course Structure

10.5. Each course may be divided into week wise sections as per the course plan. Each week of the course to comprise a lesson with a single topic or themed topics with specified learning outcomes. A 1 to 4 credit SWAYAM course is expected to be covered in 4- 12 weeks' duration including the assessment component in which (it should be 40 hours (for 3 credit course) to 90 hours (for a 6 credit course) for the full course) of learning from e-Content, reading reference material, discussion forum



posting and assignment. Faculty will need to work out lesson plan for each week with the following components:

- a) Introduction including learning outcomes.
- b) Direct instruction delivered primarily through transcribed video content with learning objectives and faculty-provided notes. Uniquely-created handouts may also be used for direct instruction, supporting e-Content with graphics and animations, case-studies wherever essential
- c) Provide list of core and supplementary reading list. Other course resources may be provided via Web links
- d) Auto-graded quizzes, Self-assessment questions where students compare their answer against an instructor-written response and grade themselves
- e) Discussion threads can be used to effectively engage students, who may communicate in discussion board threads each week on key course concepts. These discussion forums are best focused on a case study, problem, or question(s) pertinent to the lesson and should allow participants to share ideas and debate topics
- f) For lessons in which students can appropriately practice skills or concepts, short interactive tools/ social media can effectively supplement other course material
- g) Aligned formative assessment questions for each week’s lesson comprising both objective questions (such as multiple choice, multiple mark, numerical input etc.) as well as subjective questions. Formative assessments may include ungraded reflection papers, quizzes that can be re-taken, discussion forum responses, concept-maps, as well as self- and peer evaluations that are meant to help student improve or identify gaps and weaknesses.
- h) Conclusion and Forthcoming section to include week’s summary and what to expect next week.
- i) Feedback mechanism for faculty and/or TA to respond to the questions from students.

10.6. Week Plan Template:

The following is the suggested week plan template for a MOOCs:

Week 1: Introduction Learning Outcomes		
Content	Activities	Assessment
Video/s Multimedia e-content (inclusive of graphics/ animations/ scenarios/ case-study) Textual Handout Reading list (core and supplementary)	Assignments Discussion Practical assignment (as per requirement) Any other...	Quiz Peer Assessment Any other...
Week 2: Introduction, Learning Outcomes		
Content	Activities	Assessment



Video/s Multimedia e-content (inclusive of graphics/ animations/ scenarios/ case-study) Textual Handout Reading list (core and supplementary)	Assignments Discussion Practical assignment (as per requirement) Any other...	Quiz Peer Assessment Any other...
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Hosting the e-Content

10.7. All content in the form of MOOCs & e-Content being developed under NMEICT/MHRD shall be hosted at 'National Integrated Portal (NIP)' (also called e-Acharya) a Data Centre hosted at INFLIBNET, Gandhinagar. The NIP shall be linked to NME-ICT Cloud called 'Baadal' hosted at NIC, which shall be upgraded to support 3 Crore users, with a 10 Lakh concurrent connections. The up gradation of 'Baadal' shall include establishing additional Data Centres and adding CDN system to deliver the video content, so that the system would be geared up to meet the massive demand for e-Content.

11. INSTRUCTIONAL SYSTEMS for DESIGN OF MOOCS

11.1. MOOC design and development needs to be carried out by the following instructional systems design principles. The systematic and logical steps of any instructional system design are:

A) Analysis:

- **Need analysis:** Need of offering the course via MOOC, possible target reach and significance of the courses is to be established so as to justify selection of courses for the MOOC.
- **Content analysis:** Preparing raw content with the use of reference books, articles, research papers, collection of illustrations, diagrams, etc.
- **Learner analysis:** Defining prospective learner profile, essential entry knowledge.

B) Design:

Course Outline: (Main and sub-topics). Structure of topics, sub-topics with appropriate sequence in hierarchical manner will be output of this exercise.

- C) **Objectives:** Course Objectives, Module Objectives in terms of Performance Outcomes will be output of this task. Performance objectives may be many and each objective will express learner's achievement only in one small area.



- D) **Instructional Strategies:** Specific learning activities for effective training (e.g. case-studies, scenarios, cartoon-strips, analogies, individual or group activities, concept-mapping, in-text learning quizzes, interactive exercises within learning modules, discussion forum topics, blog-postings, etc.) will be planned at this stage. Treatment of MOOC will mainly depend on the planning of this stage.
- E) **Instructional Material:** Nature of Material in light of designed strategies will be planned at this stage. The material may comprise instructor's videos supported with slides, interactive multimedia consisting of graphics, animations, documentaries, recorded demonstrations, dramatized scenarios, cartoon strips, 3D models and animations, info-graphics, diagrams, sketches, maps, screencast videos, slides with audio narration, etc.
- F) **Summary:** Summary in innovative formats (e.g. Info-graphics such as concept-maps, flow-charts, sum-up videos, text-based summary, etc.)
- G) **Evaluation Strategies:** Specific assessment and evaluation exercises, activities for formative assessments and module-end exercises, summative auto-graded tests, assignments for self-check and assignments for eTutor feedbacks will be planned at this stage.
- H) **Detailed time-wise Course Session Plan** to define week-wise activities will be designed once all strategies and material is finalized. Here, mapping all content, activities, tests with time-line will be done. Final selection of activities, assignments, tests will be done only in the light of available time duration for each module. Available time duration will depend on the credits assigned to the course and its modules in the syllabus.
- I) **Implementation:** Actual Implementation with the proper announcement of course, availability of detailed course documents will be done only after all of the above stages are systematically carried out.
- J) **Duration of the course:** The duration of courses will vary depending on the level and credit points. Courses in any one of the following formats may be offered:
- 4-10 weeks for shorter courses for 2 to 3 credits at certificate level or for teacher training programme.
 - 12-16 weeks for CBCS programmes with faculty/mentor support from participating institutions/affiliations of 4-to 6 credits at diploma, UG and PG level.
- 11.2. One credit will be equivalent to 13-15 hours learning covering going through the course content, participating in discussion forums and other interactions, working on assignments and activities designated for the course etc.
- 11.3. Each week learning activities will cover going through eContent, supplementary reading. The lectures/ topics are to be broken up into short modules. Each module will have the following components:



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- A clear description of its contents and expected learning outcomes.
- Objective-type assessments (to be auto-graded or assisted by Teaching Assistants (TAs)/Mentors as the case may be)
- Activity/ assignment
- A discussion topic discussed extensively in the course discussion forums.

11.4. A team of Instructional Designers may assist SMEs (Subject Matter Experts) for designing systematic instruction based on raw content, activities and exercises provided by instructors. A team of graphics and multimedia designers may assist in creation of graphics and multimedia. These teams can work in-house strengthening institute's eContent development skills.

12. FINANCING THE MOOCS

12.1. The MHRD would finance the creation of MOOCs Compliant fresh e-content as per the 4-quadrant approach as given below:

S/No	Activity	Repurposed Content	Fresh Content	Remarks
1	Cost of a course. Cost includes videos recording & editing totaling 20 hours, quizzes, answer keys, subject additional links, additional notes and transcript of the text of all videos in English.	Rs 6.0 lakh	Rs. 9.0 lakhs	An existing NPTEL /UGC or other 40-hour course can be usually offered as two MOOC courses connected back-to-back for credit transfer with institutions.
2	Coordinator honorarium for preparation.	Rs. 2.0 lakh.	Rs. 2.0 lakh.	One-time payment
3	Coordinator Honorarium for running the Course (1 st time): for the content creator and the faculty offering the course.	Rs. 1.0 lakh.	Rs. 1.0 lakh.	
4	Coordinator Honorarium for subsequent running of the course (after the 1 st time).	Rs. 1.5. lakh	Rs. 1.5. lakh	Teacher presence and monitoring of active learning needed until exams are conducted and certificates issues. Three-month participation.
5	TA / mentor honorarium (500 active registrants, one TA for two months), 5000-10,000 active registrants, 5 TAs.	Rs. 0.3 lakh	Rs. 0.3 lakh	Assumption: less than 10 percent of active learners participate in discussion and raise questions, doubts, request additional learning material etc.
(a) or (b)	For a course having 10,000 to 20,000 registrants effective monitoring of website and	Rs. 1.5 lakh	Rs. 1.5 lakh	



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	discussion forums is the main job.			
6	Course Examination fee. Tendering possible for identification of centres where simultaneously more than one exam can be conducted.	Rs. 1000 per candidate per course unless tenders are floated.	Rs. 1000 per candidate per course unless tenders are floated.	GATE model is the working model- tender for a limited period of time is used to award contract for online exam services and scanning and storing of answer sheets for evaluation by humans if necessary.
7	Course Reviewer Honorarium. Two reviewers, both of whom peers and academic faculty with reputation and with experience in the area	Rs. 15000 per course.	Rs. 15000 per course.	Reviewer panel will be nominated by the subject-specific committees constituted for MOOC.
8	Human Resource support for Course. Not more than 5 technical project staff for supporting the course management	Rs. 2.0 lakhs per institute offering 20 or more MOOC courses at a given time.	Rs. 2.0 lakhs per institute offering 20 or more MOOC courses at a given time.	It is an administrative expense and must be approved each time by the national committee recommending MOOC programmes.
9	Workshops About 5-10 workshops are immediately needed for updating faculty with tools and technologies for certification on-line. 60 to seventy five participants, restricted to those who travel from within 200 -300 km radius of the site for workshop	Rs. 5 lakhs per workshop, or pro rata	Rs. 5 lakhs per workshop, or pro rata	Three days, including travel, honoraria for organizing team (Faculty, mission staff and mission consultants who are involved in the organization) and contingent expenses.

13. QUALITY ASSURANCE

13.1 Quality, one of the key elements of MOOCs, shall be monitored throughout the design, development and delivery cycle of the MOOCs. Quality shall be managed at the offering institution / MOOCs offering team level while creating the content.

13.2. Quality assurance at the individual institution/ MOOCs team level shall have:-

- Content checks to be ensured while developing the course content for plagiarism and source of information.
- General course curriculum/standards to be followed for the credited courses while ensuring that updated knowledge is being imparted to the students.
- Suggested course plan for better management.



- Suggested language and formatting style and suggested image pools to be used.
- Suggested production parameters and video quality parameters.
- Suggested assessment types and style.

13.3. Overall quality assurance before scheduling the course for delivery shall have:

- Final typos and grammar checks.
- Video quality checks.
- Brand language/ message (i.e. in keeping with MOOCs guidelines).
- Pedagogy and learning experience.
- Formatting of text and images.
- Ensuring the presence of basic MOOCs elements like video/e-Content, discussion forums, Interactive elements, assignments, assessment methodology etc.

13.4. While building a MOOC on SWAYAM, course team shall take care of the following aspects:

- Accidental mistakes, integrity of content, outdated information, inaccuracies and inconsistencies in the videos and other course content.
- Double-check the veracity of the answers to questions with determined answers (e.g. multiple choice, dropdown etc.) with regards to assessments.
- Check that all author names, readings, etc. are accurately represented on course resource pages and other content.
- Check for any broken links, missing pages, images, multimedia component both at course as well as content level.

13.5. Quality assurance and testing of the completed course shall be put in place in the SWAYAM platform. This will include running through a trial version of the course to check for any misplacements of content, functionality of all interactions, and functionality of all links.

14. INTELLECTUAL PROPERTY RIGHTS /COPYRIGHT HANDLING

14.1. The course team will have to obtain copyright clearance for any readings, images, and video clips used as core and supplementary reading in case of licensed material if used. Until clearance has been obtained, direct references to specific materials should be avoided in video content or other course material.

14.2. All contents (text, audio, video, animation, quiz etc.) developed with the funding of NMEICT will be the property of SWAYAM. However, the content created prior to the issue of these guidelines shall continue to follow the provisions of the agreement under which such content has been created.

14.3. All courses and contents posted in SWAYAM will be copyrighted to SWAYAM. Ministry will, from time-to-time, announce policies for access and charges if any (for



certification) and will also publish appropriate Open Educational Resources policy in consultation with other national and international bodies.

14.4. The terms of service should be clearly laid out so as to address the following key points by the PI:

- Any disclaimers should be clearly spelt out.
- User /student/ institutions should be informed about the usage rights of the course content available on SWAYAM.

15. ASSESSMENT AND CERTIFICATION

15.1. The decision to use different types of assessments should be based on the stated learning objectives and shall be taken by the PI offering the course. Ideally, courses will offer both formative assessment to promote deeper learning, critical thinking and reflection, in combination with summative assessments designed to gauge student achievement and/or performance. Summative assessments may include graded quizzes, reports or projects, peer assessments or proctored examination.

15.2. The assessment strategy should align with learning outcomes shall be clearly spelt out. It should include relevant assessments (exercises, in-lecture quizzes, post assessment quizzes, etc.) along with their respective weightage. It should also lay down methodology for holding a proctored examination in case of credit-based courses.

Assessment Options

15.3. Some Homework and Assessment Options are

- Multiple choice test if applicable (quiz tool)
- Homework assignment (quiz or programming assignment)
- Write a commentary, review, comparison, analysis, and observation within your community, reflection or other for homework (peer assessment).
- Response to a text, video or other media object for homework (peer assessment).
- Prepare a presentation on X and upload (text, photo, video, PPT).

Peer Assessment

15.4. Peer Assessment can be an important element of student assessment. The courses which plan to use peer assessment should develop a rubric which aligns with learning outcome. Here we have an example which lists the dimensions of rubric for reflective writing piece.

Example dimensions for a reflective writing piece

- Depth of reflection



- Use of textual evidence and historical context
- Language use

15.5. Learners can get a certificate after they have attended the classes and submitted the assignments/quizzes. For credit-based courses, an accepted and approved evaluation format in alignment with CBCS or any other system that UGC, AICTE, etc. may implement from time to time, with a term/semester end proctored examination, ideally at the computer lab of the institution where the students is enrolled or at an institute close to the one where the student is enrolled. The exam may be conducted nationwide through an exam partner. Learners can get a certificate after they have registered for, written the exam and successfully passed. The online assignments/quizzes may carry weightage in the final consolidated score.

15.6. The service providers of MOOCs will offer the courses free through open access mode but charge for the service of proctored examination. This practice will be followed in this until such a time new policy announcements are made. A certifying body for each discipline will be created by HRD with the help of participating institutions. It is recommended that the Institutions which offer the course will follow a general requirement and issue certificates with their names and the SMEs on each certificate with SWAYAM explicitly appearing on the logo of the certificate and the Ministry's support to the project and guidance being endorsed.

15.7. Efforts must be made to include industry or industry bodies as partners in the certification process. This creates important added value for the students. Wherever possible, education and R & D team members from the industry need to be included in the design of course contents and problem sets. However, problems may be of a generic nature and specific practices of participating industries should not be used as contents.

Conducting the Examination

15.8. SWAYAM organizing /implementing team will designate staff for the conduct of proctored exams and will take care of the logistics of conducting the certification exam. About 1000 Centre shall be established to conduct SWAYAM exams across the country. The faculty will have to create at least one question paper for the mock exam and one or more equivalent examination papers for the final certification exams.

15.9. A proctored exam by definition is an exam that is administered by an individual who supervises the student while they are taking the exam. The proctor's function is to ensure the integrity and security of the exam in a secure environment. To ensure the validity and acceptability of the CBCS credits offered by the Credit



offering Digital online courses (MOOCs) a scheme of Final proctored exam, with assigned weightage as per assessment design, can be used in final assessment of the students.

15.10. The MOOCs platform will have the following facilities for the proctored exam:

- Student can be prompted to register for the proctored test via a registration link available on the course Assessment page on SWAYAM platform.
- The procedures for registration for the Proctored exam can be kept simple and self-explanatory with minimum required details from student end.
- The Exam proctoring/ conducting charges and fee structure should be explained to the student in advance via the course page and introductory video.
- Provision for offline mode(s) of payment should also be kept for the students who prefer offline payment and receipt.
- Provisions for Rescheduling and Canceling the Exam should be provided to the student and Course instructor both. Proper email communication channels can be employed to immediately inform of the exam schedule changes.

15.11. A set of institutions/ Universities/ Colleges who would be part of the MOOCs initiative can also offer to proctor the exams. This can provide an option for the pan India coverage, including remote areas. Student can select his/her center from the available institutions for exam. An agency or a set of central professional proctoring agencies can be given the contract to proctor the exam for all the MOOCs offered on the SWAYAM platform.

Certification and Credit Sharing

15.12. On successful completion of each course, the institution offering the MOOCs course would issue the certificate, along with the number of credits and grades, through which the student can get credits transferred into his marks certificate issued by his parent institution.

15.13. Guidelines for credit sharing will be issued by concerned Regulators such as UGC, AICTE, etc. for consideration by various Institutes. There may be standard norms for the host Institution to conduct the course that may include continuous evaluation through assignments, online quizzes, case studies, online writing exercises, term examinations, student feedback, online forum management, etc. Results should be declared within one month of the completion of the Course. Priority can be given to students taking the course for credit over those who participate for learning only.



Guidelines for developing Online Courses for SWAYAM

1st June 2017

**Government of India
Ministry of Human Resource Development
Department of Higher Education**

Revised Guidelines for developing online courses for SWAYAM



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BACKGROUND AND PERSPECTIVE

Whereas, with a view to providing access to the best quality learning resources across the country, the project 'Study Webs of Active Learning for Young Aspiring Minds' (SWAYAM) has been started.

Whereas, SWAYAM provides an integrated platform and portal for online courses, using information and communication technology (ICT) covering High School till all higher education subjects and skill sector courses to ensure that every student benefits from learning material through ICT;

Whereas, SWAYAM is a:

1. One-stop web and mobile based interactive e-content for all courses from High School to University level.
2. High quality learning experience using multimedia on anytime, anywhere basis.
3. State of the art system that allows easy access, monitoring and certification.
4. Peer group interaction and discussion forum to clarify doubts
5. Hybrid model of delivery that adds to the quality of classroom teaching.

Whereas, SWAYAM involves development of Massive Open Online Courses (MOOCs) compliant e-content (video and text) and building a robust IT platform;

Whereas, in order to disseminate educational content to masses, the MHRD has launched 32 Direct-To-Home (DTH) educational TV channels called "SWAYAM Prabha" broadcasting education content 24x7 basis, and the content developed under SWAYAM would be used for transmission in SWAYAM Prabha (SP) DTH channels.

Whereas, there is a need for synergizing the quality of contents on these platform, and for standardizing the content delivery;

Now, with a view for systematic development of the online courses for the SWAYAM, the following guidelines which propose to lay down technical and production standards for the e-content have been issued:

1. DEFINITIONS:

1.1. In these guidelines, unless the context otherwise requires, the following words shall have the following definitions:

- a) '**Academic Advisory Council (AAC)**', shall mean a group of academicians of repute identified and appointed by the National Coordinator with the mandate of identifying the CCs, examining the course proposals and approving them.
- b) '**Course Coordinator (CC)**': The CC shall be a Subject Matter Expert (SME) belonging to a reputed educational institution/Industry or a specialist in the field identified and entrusted with the task of developing online course in a



- given area by the NC.
- c) '**Course**' shall be of two types: credit courses and non-credit courses.
- Credit Course* shall mean a course which is taught for at least one semester as a part of a subject/programme.
 - Non-Credit Course* shall include courses like awareness programme, continuing education programme or training of specific skill set as independent course, which are not part of any set curriculum. It can be of shorter duration.
- d) '**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.
 - 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.
- e) '**Host Institute**', Educational Institute offering the MOOC and conducting end examination, awarding credits and certification.
- f) '**MOOCs**': Massive Open Online Courses (MOOCs) are such online courses which are developed as per the pedagogy stated herein and following the four quadrant approach.
- g) '**National Coordinators (NCs)**': National Coordinators are the Institutions that have been so designated by the Ministry and assigned a specific sector for preparation of online courses for SWAYAM.
- h) '**Parent Institute**', Institute to which student registered for MOOC is enrolled.
- i) '**Sector**' shall mean a particular level or discipline of learning allotted to a NC by the MHRD.
- j) '**Subject Matter Expert Groups (SMEGs)**' shall mean a group of reputed academicians in a particular subject identified by the National Coordinator in each subject.
- k) '**Subject**' shall mean a specific area under a discipline (Example: Physics) taught in an educational institution consisting of specific programme/ courses, resulting in the award of a certificate/ diploma/ degree.
- l) '**SWAYAM Academic Board**' shall be a apex academic body that would lay down standards of quality for the courses to be offered through SWAYAM.
- m) '**SWAYAM Board**' shall be the Authority that would be overall in-charge of the formulation of the Platform, prescribe quality of content and facilitate conduct of examinations.



2. SWAYAM Board

SWAYAM Board (SB) shall be the Body for managing the SWAYAM and SWAYAM Prabha by coordinating the work of technical and academic bodies so as to deliver high quality online education.

- a) Composition: The Board shall have the following membership:
- Secretary (Higher Education) – Chairperson
 - Chairperson UGC
 - Chairperson AICTE
 - (5) Bureau heads from the Ministry of HRD (ex-officio) looking after: Technical Education, Management Education, Higher Education, School Education, Open/Distance Education
 - All National Coordinators of SWAYAM and SWAYAM PRABHA
 - JS&FA of MHRD
 - Mission Director NMEICT (Member Secretary)
- b) Functions: The SB shall discharge the following functions:
- Take decisions for smooth running of SWAYAM and SWAYAM PRABHA platforms.
 - Lay down Policy regarding implementation issues including: cost payable for development and delivery of the courses, examination fees, accepting the content from foreign/private institutions/universities, within parameters laid down by the competent authority.
 - Review the progress of each NC pertaining to sanction, progress, development and delivery of various online courses.
 - Any other matter that has arisen during the operation and delivery of SWAYAM and SWAYAM Prabha.
- c) Secretariat: The SB shall have a secretariat located in AICTE/ MHRD for servicing the Board, composition of which would be decided by the Board.

3. SWAYAM Academic Board (SAB):

- (1) There shall be a SWAYAM Academic Board responsible for guiding the National Coordinators and for laying down quality standards. The SAB shall be constituted as follows:
- Chairman UGC – Co Chairperson
 - Chairman AICTE – Co Chairperson
 - Two technical experts nominated by the Ministry
 - Two reputed academicians nominated by the Ministry
 - Two representatives from the Industry, one each nominated by MSME and Ministry of Skill Development
 - Director AICTE – Member Secretary
- (2) The SAB shall discharge the following functions:
- Monitor the quality of the courses on the SWAYAM and lay down quality standards.
 - Offering of courses on SWAYAM
 - Integration of SWAYAM and SWAYAM Prabha
 - Monitor the progress of conduct of the end-term examinations



- for the SWAYAM courses and resolve issues if any.
- v. Monitor the progress of transfer of credits and resolve issues if any.

4. NATIONAL COORDINATORS

4.1. The following shall be National Coordinators for each of the Sectors for the purpose of development of the e-content, delivery of online courses and overseeing the assessment procedures of courses offered on SWAYAM. However, the Ministry can add National Coordinators from time to time depending on the need for expanding the Courses to be offered:

S. No.	National MOOCs Co-ordinator	Sectors
1	University Grants Commission(UGC)	Non-Technology Post Graduate Degree Programmes.
2	NPTEL	Technical / Engineering UG & PG degree programmes.
3	Consortium for Educational Communication	Non Technology Under Graduate Degree programmes.
4	IGNOU	Diplomas and Certificates programmes
5	NCERT	School Educational Programmes from Class 9 th to 12 th .
6	NIOS	Out of school children Educational Programmes from Class 9 th to 12 th .
7	IIM Bangalore	Management programmes.
8	NITTR, Chennai	Teacher Training programme.

5. SCOPE OF SWAYAM

5.1. The SWAYAM shall cover the following:

- 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).
- 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.
- 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.
- 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.
- 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.

6. Creation of online courses for SWAYAM:

6.1. Identification:

The National Coordinators (NC) shall ensure that work of converting a course into a MOOC shall be done in a comprehensive manner, such that there is complete coverage of all the courses in a subject/programme.

- a) The NC shall identify courses where online education is possible and preferred. The identified courses shall be advertised in newspaper and other media calling for Expression of Interest (EoI).
- b) In all identified courses, **Expression of Interest** (EoI) can be invited for credit courses from CC through recognised Universities/ Institute of National Importance and other educational Institutions authorized to award degrees/credits and from subject specialists both in Public and Private Sectors for non-credit courses.
- c) The CC while submitting the expression of interest (EoI) shall also submit an undertaking from a Host University/Institution conveying its willingness to offer the course for credit, conduct examination, assessment, evaluation, issue certificates and transfer the credits to the students of the Parent University/Institution as per the UGC/ AICTE/any other regulatory body Regulations issued for the purpose.
- d) After evaluating the EoI received, the NC shall identify a Course Coordinator (CC) for each Course, based on (i) the quality of the sample content, (ii) reputation of the expert/ institute and (iii) teaching-learning methods proposed, and invite him/her to prepare the MOOC within 6 months from that date.
- e) The NC shall ensure that no further courses are allotted to a CC unless he/she has successfully completed a course allotted earlier.
- f) In case two or more CC from the same Institution drop / discontinue courses at a given time, the host Institute shall be denied further participation for a stipulated time.
- g) In case, the selected CC is a private person or a private institution, not entitled to award credits/ certificate, it shall identify a public Institution authorized to offer credits/ certificate for the course and issue certificate, as Co-applicant. An MoU between the two defining their roles will be formulated and later approved by the NC / SB.
- h) The NC shall constitute the following Committees immediately:
 - i. **Academic Advisory Council** (AAC) consisting of academicians for assisting the NC to consider and take decisions on every MOOC proposal.
 - ii. **Subject Matter Expert Groups** (SMEGs) for each subject consisting of academicians for evaluating the Proposals for Online Courses and make recommendations for its acceptance, improvement or rejection.
- i) The courses, which carry credits/ certification, shall be cleared by the 'host' University/Institute, who shall also agree to conduct End Examination, assessment and grant credits/ certification.



6.2. Pre-production activities (12 weeks/Online Course)

- a) Each CC shall constitute an academic team of educationists with proven abilities for preparation of the Teaching Learning Material (along with the pedagogy and the activity-based interventions for improving the delivery of the content).
- b) The CC shall, within 2 weeks from the date of appointment, prepare a
- c) **Proposal for MOOC** consisting of the following and submit the same to the NC for approval:
 - 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, multi-media 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.
 - vi. Assessment system: Weekly /biweekly assessments and assignments that would be required to be taken by the students.
 - vii. Reading material: Notes/extra readings.
 - viii. Self-assessment modules: Quizzes and tests.
 - 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.
 - xi. The CC shall ensure that the Online Course, (where **Credits/Certificate** on the Course are to be offered) under SWAYAM, (i) is Cleared by a University/ Institute and (ii) the University/ Institute agrees to issue certificate(s) and **'Transfer the Credits'** to Registered Students under SWAYAM that are existing as regular & enrolled students from a recognized University/Institute across the country and shall follow, the UGC & AICTE (Credit Framework for Online Learning Courses through SWAYAM) Regulation, 2016, a 'Gazette Notification' issued on 19th July 2016 & 17th August 2016, respectively.

Non-submission of the proposal in the above manner within the given period shall automatically result in cancellation of the order entrusting the work.
- d) On receipt of the Proposal for MOOC, the NC shall place the same before the **Subject Matter Expert Groups (SMEGs)** for its consideration. The SMEGs shall convey its approval, amendment or rejection within Three weeks. In case the Subject Matter Expert Groups (SMEGs) makes suggestions for improvement/changes, the CC shall make the changes and present the same within 2 weeks further. The Subject Matter Expert Groups (SMEGs), may thereupon, make the final recommendation to the Academic Advisory Council (AAB).
- e) Based on the feedback given by the Subject Matter Expert Groups (SMEGs), the Academic Advisory Council (AAB) shall examine each



proposal and either approve, suggest changes or reject same within a further period of 2 weeks from the date of receipt of Subject Matter Expert Groups (SMEGs) report. The AAB shall also recommend to the NC the required budget for preparing the MOOC.

- f) The NC shall thereupon, and without any further delay, communicate the decision to the CC and also release the funds required for starting the production.

6.3. Production activities (8 weeks/ Online Course)

On receipt of the approval from the NC, the CC shall proceed for production of the videos in the following manner:

- a) **Identification of the studio:** In order to have uniformity in Technical quality of contents developed under SWAYAM & have compatibility between contents developed by NMCs, it is recommended to have uniform set of equipment being used by CCs. The studio hired by CC shall have all equipment as listed in **Annexure-I**. In case a studio of these specifications is available in the institution, the same shall be used. Otherwise, a studio with these facilities can be hired for the purpose of making these Programmes as per the rates given in **Para 9 A**).
- b) **Production team:** There shall be a Production team experienced in preparing Programmes for educational purposes, consisting of a Director/Producer, Instructional Designer, Production Assistant, Camera persons, multi-media technicians and Editors, who can be paid by the Course Coordinator as per the rates given in **Para 9 A**).
- c) **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). Content is required to be submitted in a hard disk, the (i) 'Video Edit files' @ 10 Mbps for transmission on SWAYAM PRABHA and (ii) further compressed files @ 2.5 Mbps along with other TLM (in SWAYAM Template) for delivery through SWAYAM.
- d) **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.
 - It shall be the responsibility of the CC to ensure that none of the graphics, animations, images, sound clips, video clips used are plagiarized or cited without formal permissions from owners who must be informed of the distribution policies of SWAYAM.
 - It shall be the responsibility of the CC to ensure that none of the graphics, animations, images, sound clips, video clips used are plagiarized.
 - 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.



- e) **Transcription of Video** shall be prepared along with the programme, which may be needed for translation of the transcript and for sub-titling in other languages.

6.4. Post production activities (4 weeks/Online Course)

There shall be a post-production team consisting of the Video Editor, Sound Editor and Music team, equipped with video editing software working in Non-Linear Editing System (NLE) along with suitable equipment listed in **Annexure-I**. They shall be responsible for:

- Video editing the programme using HD parameters.
- Writing, (re)recording, and editing the soundtrack if needed.
- Adding visual special effects, multimedia effects and computer-generated imagery (CGI)
- Sound re-recording or mixing with professional audio equipment.

6.5. Review of the Course content and approvals (4 weeks/Online Course)

- a) On completion of the programmes, the CC shall intimate the NC about the readiness for review of the Course.
- b) Immediately thereupon, the NC shall get the course Previewed/reviewed from academic and technical experts and thereafter convene the SMEGs meeting for viewing the course in detail along with the video and reading resources.
- c) The SMEGs, after viewing the course shall verify the following and based on these recommendations, the NC will place the course before the AAB, which will approve the Course for uploading on the SWAYAM portal:
 - Final typos and grammar checks.
 - Brand language/message (i.e. in keeping with Online Course guidelines)
 - Pedagogy and learning experience.
 - Formatting of text and images.
 - Ensuring the presence of basic Online Course elements like video/e-Content, discussion forums, Interactive elements, assignments, assessment methodology etc.
 - Video quality checks.
- d) The NC in consultation with the CC, will also recommend the 'Start date' and the 'End date' for the course.
- e) Based on these recommendations, the NC will place the course before the AAB, which will approve the Course for uploading on the SWAYAM portal.

7. Notification of Course to all Universities

As soon as AAB approves a course, the same will be reported to the SWAYAM Board by the NC. The SWAYAM Secretariat shall request the concerned regulator to communicate to all Universities/Institutes under their jurisdiction to notify the courses to their departments and affiliating institutions for availing and transfer of credits by students enrolled with them.

8. ASSESSMENT AND CERTIFICATION

- a) The CC shall decide the suitable assessment system for the course based on the stated learning outcomes, in consultation with the host University/



institution offering the course.

- b) Normally, the assessment shall have both formative assessment to promote deeper learning, critical thinking and reflection, in combination with summative assessments designed to gauge student achievement and/or performance. Summative assessments may include graded quizzes, reports or projects, peer assessments or proctored examination. Whereas an online examination would be the preferred mode, the CC may decide on the mode of conducting the final examination. Efforts must be made to include industry or industry bodies as partners in the certification process for further value addition to the students. Wherever possible, education and R & D team members from the industry need to be included in the design of course contents and problem sets. However, problems may be of a generic nature and specific practices of participating industries should not be used as contents.
- c) In case, a pen and paper final examination is to be conducted, the same shall be offered through any college/school volunteering to conduct the same. The decision in this respect will be taken by the host institution.
- d) After conduct of the examination and completion of the evaluation, the host institution shall award marks/grade as per the evaluation scheme announced, within 4 weeks from the date of completion of the final examination.
- e) On successful completion of each course, the host institution offering the Online Course would issue the certificate, along with the number of credits and grades, through which the student can get credits transferred into his/her marks certificate issued by his/ her parent institution.

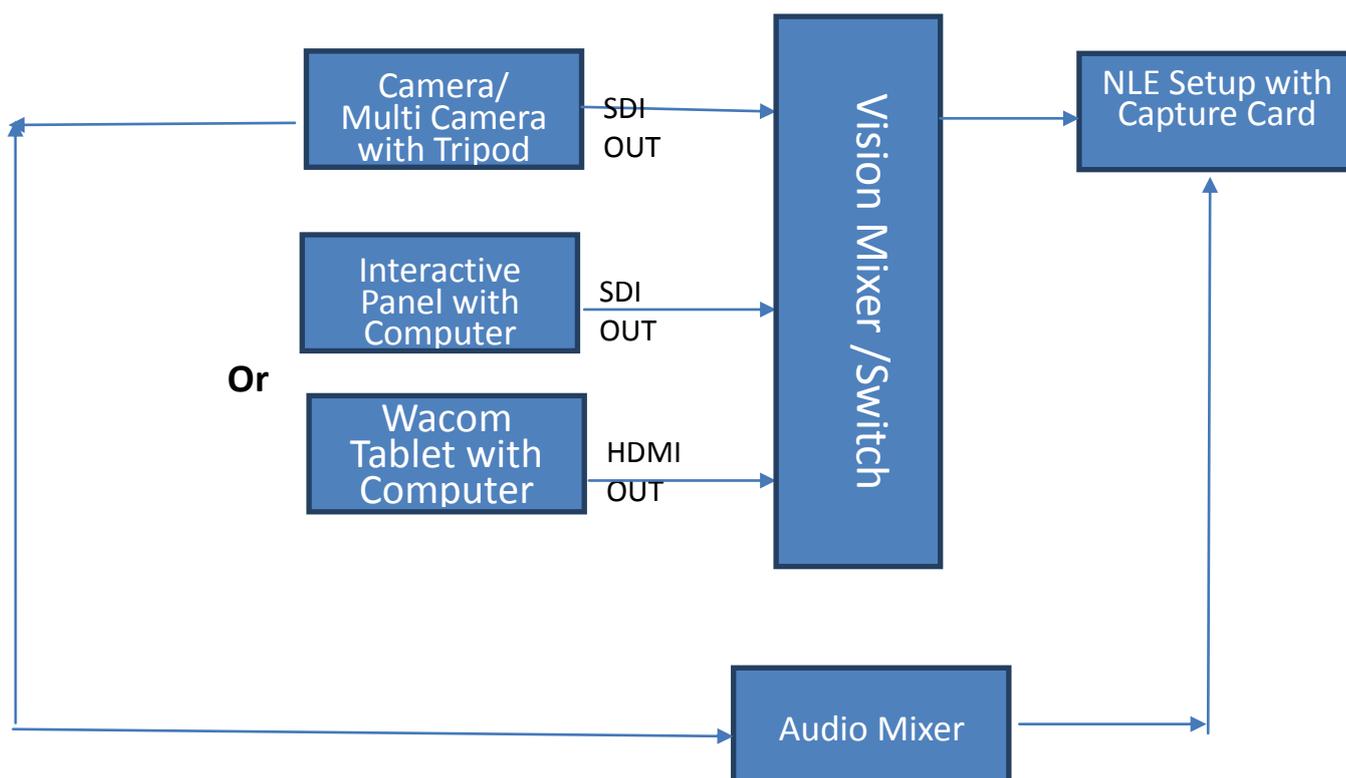
9. INTELLECTUAL PROPERTY RIGHTS /COPYRIGHTHANDLING

- a) The CC shall follow copyright laws for any readings, images, and video clips used as core and supplementary reading in case of licensed material if used and submit an undertaking to that effect to the NC.
- b) All contents (text, audio, video, animation, quiz etc.) developed with the funding of NMEICT will be the property of SWAYAM.
- c) All courses and contents posted in SWAYAM will be copyrighted to SWAYAM. Ministry will, from time-to-time, announce policies for access and charges, if any (for certification) and will also publish appropriate Open Educational Resources policy in consultation with other national and international bodies.
- d) The CC shall be given explicit permission for creating books and other distribution materials ever for commercial purposes with the explicit undertaking that contents published in SWAYAM shall remain there.
- e) The terms of service should be clearly laid out so as to address the following key points by the CC:
 - Any disclaimers should be clearly spelt out.
 - User /student/ institutions should be informed about the usage rights of the course content available on SWAYAM.

Equipment Setup & Specifications, for use in development of Online Course.

Note: Make/Models/trade names appearing in Annexure-I are indicative only, equipment with similar or better features & Specification are acceptable.

Block Diagram



1. Camera(s):

Three 1/3" type; Full HD CMOS sensors; PAL color; 1920x1080/50i; Gross Pixels \geq 2.2 Million; camera to have a resolution of \geq 850 TVL; Sensitivity: \geq 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 \geq 50 Mbps, should also support Intra / LONG GOP recording. Two or more Memory Card/Media Slots, Hot Swap for Continuous Recording, with content security features. To support AVC H.264/MPEG4, MOV Files / Quick Time; Video out: SDI & HDMI.

Camera to have a suitable **Tripod**, with minimum payload (> the weight of Camera setup). Tripod should have floor spreader.



2. Non-linear editing:

Specifications: Non-Linear Editing Unit.

a). Editing Software: Adobe Creative Cloud for Teams

c). 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).

d). Video Capture Card compatible to the NLE software similar to Black Magic Design/ HD Extreme / AJA / MATROX / DVS.

Native editing for DV, DVCAM, DVCPRO, DVCPRO 50, DVCPRO HD, AVC-INTRA, Long GOP, XAVC, FireWire device control, Still images: PSD, BMP, JPEG, PICT, PNG, SGI, TARGA, TIFF. Support for AIFF, WAV, MP3, CAF, BWF, SDII, NeXT, QuickTime.

e). Effects: FxPlug support, Real-time software-based audio normalization, RT Extreme for scalable software-based, multi stream real-time effects in DV, SD, and HD formats, Real-time effects playback on main display and on NTSC/PAL or HD monitora with perfect synchronization, Dynamic RT for automatically adjusting playback quality and/or frame rate based on hardware capabilities Key frame graphs and editing in Viewer or Timeline, More than 200 transitions, effects, and filters, Import multilayered Photoshop files with layers and alpha support

f). Character Generator Software with latest Patches to support English/ Hindi –Devnagri, technical & scientific fonts, symbols etc.

3. **Card Reader:** compatible to the Memory Card of Camera's:

4. **(a) 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.

OR

4. (b) Interactive touch screen panel with required computer, pen and software.

Interactive touch screen panel with required computer, pen and software & appropriate adjustable Mount with total upto 6' Height.

LCD Panel:

≥ 50 inch widescreen.



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Max resolution:	1920 x 1080
Brightness:	300 cd/m ² or more
Contrast ratio:	3,000:1 or better
Response time:	6 ms or better
Driver:	OS: Windows / Linux/ MAC
Touch pen or Finger Interactivity:	Yes
Video input:	Compatible with the computer
Video outputs:	Compatible with the computer & Vision Switcher

Note:

- a. The interactive panel system should be provided with: a computer having at least one HDMI output port, two USB ports and a trolley stand.
- b. PC should have a single processor Intel Core i7 4930K 3.4 GHz or higher and the VGA card should be GTX 780 or higher. Equivalent AMD VGA card may also be provided with MS Office suite latest version installed.
- c. Any digital peripheral / glues / distribution amplifier required with the system should be quoted as per the offered workflow design.

5. Laptop Touch Screen ≥15"

- Processor: Intel® Core™ i5 processor or better, 2.40 GHz or more.
- Operating system: Windows 10, 64bit.
- Display: 14.0" or 15.0"
- Memory: 8GB (4GB x2) DDR3 1600Mhz or more.
- Hard drive: 500GB 5400RPM for laptop, SATA hard drive.
- Open Office suite latest version.
- Optical drive.
- Wi-Fi, LAN, Bluetooth.
- HDMI true HD support Out Put.
- Built-in speakers for laptop.
- Ports: network connector RJ45, HDMI, USB 3.0, headphone jack, microphone jack, SD card reader.
- Battery capacity 4 hours or more continuous use.
- Ampli-speakers for the PCs.

6. Vision Mixer/Switcher

For connecting Cameras, Interactive Panel and Tablet: 4-CH HD Video Switcher with Inbuilt Frame Synchronizer on all inputs, Frame Storage capabilities, supporting 2-CH HD-SDI, 2-CH HDMI inputs, 2-CH HD-SDI & 1-CH HDMI outputs, 1 x Chroma-Keyer, 1x DSK.

7. Audio mixer:

Input channels: 8 Channels with minimum 6 Mic/Line selectable inputs.
I/O interface: XLR / Phono, (balanced/un-balanced).



Input sensitivity: Mic -60 db or better, Line 0 db
Audio frequency response: ≤ 20 Hz - ≥ 20 KHz ± 0.5 db
Total harmonic distortion & noise: ≤ 0.01 % -30dbBu input routed to Mix, Mic gain 30dB
S/N ratio: Better than 100 dB
EQ bands: 2 (HF, MF & LF)
Variable send (aux) buses: Minimum 2
Returns: Minimum 2

Other features:

- True, professional +48V phantom power (min 2 I/P) for condenser microphones.
- Linear / Slider fader.
- RCA / Phono playback inputs and record outputs.
- Peak LEDs on all input channels.
- Mute and PFL on input channels. Output metering.

8. Microphones:

UHF wireless Lavalier / collar diversity microphone with Compatible Receiver having minimum of 6 selectable channels as per Indian region

THD: ≤ 1 %
Signal/Noise ratio: ≥ 100 dB
Rf output: ≥ 25 mW
Battery life (operating time): Min. 8 hours (2AA Batteries)
Polar pattern: Supercardioid / Hypercardioid / Cardioid
Mic type: Electret / Condenser / permanent Polarised
Frequency range: ≤ 40 Hz to ≥ 20 kHz ± 3 db,
Receiver Output: XLR (Balanced) Line output
Accessories: Wind shield, Mic Clip & other standard accessories

9. Active speaker (2 way)

Type: Active
Low/mid driver dimensions: 5" or more
Tweeter dimensions (mm): 20 mm to 40 mm
RMS: (Both LF + HF): ≥ 50 watts
Frequency response: ≤ 45 Hz - ≥ 20000 Hz
Max. SPL: ≥ 100 dB
Protection circuits: Overload
Controls: Treble, volume, mains switch (on/off)
Line inputs: Minimum 1
Line inputs connectors: XLR & 6.3 mm Jack
Input Sensitivity: Selectable -10 dB/+4 dB
Operating voltage: 230 V A C $\pm 10\%$, 50 Hz

10. Studio Cool Lights:

STUDIO LED Lights– for Day Lights:

- a) LED \geq 50 W with diffuser & Barn-doors.
 1. Colour temperature: about 5600K & 3200K
 2. Control: Manual.
 3. Ceiling Mount.
 4. On board system to control intensity from 0-100%
 6. 4 leaf barn door, diffusers, C clamp, safety bond
- b) LED Diffused Panel lights, \geq 50 W –
 1. Colour temperature: about 5600K
 2. Control: Manual
 3. Ceiling Mount.
 4. 4 leaf barn-door, diffusers, C clamp, safety bond.

11. UPS:

Approved Brands Company ISO 9001 with minimum 30 minutes backup. Sealed maintenance free VRLA Battery. If more wattage UPS is required, bidder should justify the same by submitting the Power Load requirement of the equipment. Some of the features required in UPS are:

- Single Phase IN and Single Phase OUT
- Wattage: \geq 10 KVA
- Type:(On-line) IGBT
- Input power factor: \geq 0.98
- Output power factor: 0.8 or better
- Input power supply: 160 V - 270 V 50HzAC.
- Output 230 V \pm 1%, 50 Hz AC.
- Isolated I/p o/p. Battery Bank with Frame/Rack

B) Post Production processes & Standards.

- Video recording format: Full HD 1920x1080 pixels.
- Videos aspect ratio: 16:9 (widescreen).
- Module Delivery: 1080i following MPEG-4 AVC Compression.
- Audio Channel 1 to have Mixed Audio Track.
- Font size: Heading: 24-30; Sub-heading: 22-26; Body: 20-24;
- Full screen Video Frame.
- All graphs and diagrams must have clear font.
- The expert/teacher should speak extempore as delivery made in case of classroom set-up and avoid reading from written material or a Teleprompter.
- Video frame to maintain 6-8% headroom;
- Video quality and Audio levels should be constantly monitored while recording.

Voice modulation be taken care of. Video clips or audio clips from eminent experts, outdoor shooting, lab based demo etc. can be used appropriately.
