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# Implementation of Blended Learning Classroom Pedagogy for Third Year through MOOCs for Open Elective Courses (OBE – Oriented Approach)

**AY 2025-26 | Even Semester**

## **STANDARD OPERATING PROCEDURE**

**Department of Computer Science and Engineering**  
[Internet of Things and Cybersecurity including Blockchain Technology]





## **Preamble**

In alignment with the institutional commitment to academic excellence, quality assurance, and the principles of **Outcome-Based Education (OBE)** and **NEP-2020**, the department recognizes the need to adopt flexible and innovative teaching-learning practices for third-year Open Elective courses.

In the rapidly evolving landscape of higher education, the integration of digital technologies with traditional classroom teaching has become essential to meet the learning needs of present-day students. Recognizing this shift, the department proposes the systematic implementation of **Blended Learning for Third Year Open Elective Courses** offered through **Massive Open Online Courses (MOOCs)**, primarily via the NPTEL/ SWAYAM platform. This initiative aims to leverage high-quality national-level online resources while ensuring structured academic guidance through regular classroom interaction.

Open Elective plays a crucial role in providing interdisciplinary exposure and flexibility to students. Offering these courses through MOOCs enables access to expert instruction, standardized content and nationally recognized certifications. However, effective learning through MOOCs requires continuous motivation, guidance and academic monitoring. To address this requirement, the department adopts a **Blended Learning approach**, wherein online MOOC learning is complemented by face-to-face classroom facilitation by assigned faculty members.

This **Standard Operating Procedure (SOP)** is formulated to provide a clear, uniform and comprehensive framework for planning, execution, facilitation, monitoring and review of MOOC-based Open Elective courses over a **typical 12-week duration**. During this period, both students and faculty register for the same MOOC course, participate in weekly learning activities and assessments and prepare for the final proctored examination conducted at an approval remote center.

The SOP is developed for extending its learner-centric philosophy to MOOC-based delivery. By adopting this SOP, the department aims to ensure consistency in implementation, clarity of roles, academic discipline and effective student engagement. This document serves as a guiding reference for the department, course teachers and students, supporting innovative teaching-learning practices in alignment with **Outcome-Based Education (OBE)** principles and the vision of NEP 2020.



## **Implementation of Blended Learning Classroom Pedagogy for Third Year through MOOCs for Open Elective Courses**

### **(OBE - Oriented Approach)**

#### **What is a Blended Learning Classroom?**

Blended learning is a systematic and learner-centric institutional approach that strategically **integrates online teaching modalities** with **face-to-face classroom interaction** to enhance the overall teaching-learning process. Rather than replacing traditional classroom teaching, blended learning complements it by leveraging the strengths of both digital and physical learning environments.

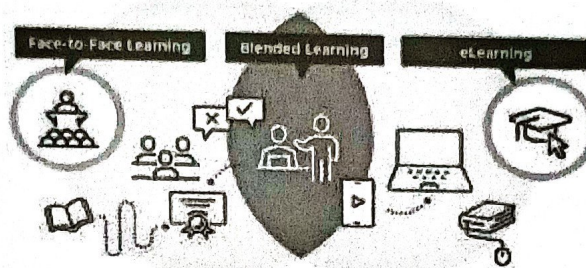
In a blended learning framework, a significant portion of content delivery takes place through online platforms such as MOOCs, **Learning Management Systems (LMS)**, **recorded lectures** and **digital learning resources**. Students engage with this content at their own pace, allowing flexibility in time, place and speed of learning. This pre-class online engagement prepares students with foundational knowledge before they enter the classroom.

The classroom component of blended learning is deliberately designed to move beyond conventional lecturing. **Face-to-face sessions** are utilized for concept clarification, interactive discussions, application-oriented activities, problem-solving, case studies, peer learning and mentoring. The faculty member plays the role of a facilitator and guide, supporting students in connecting theoretical concepts learned online with practical understanding and real-world applications.

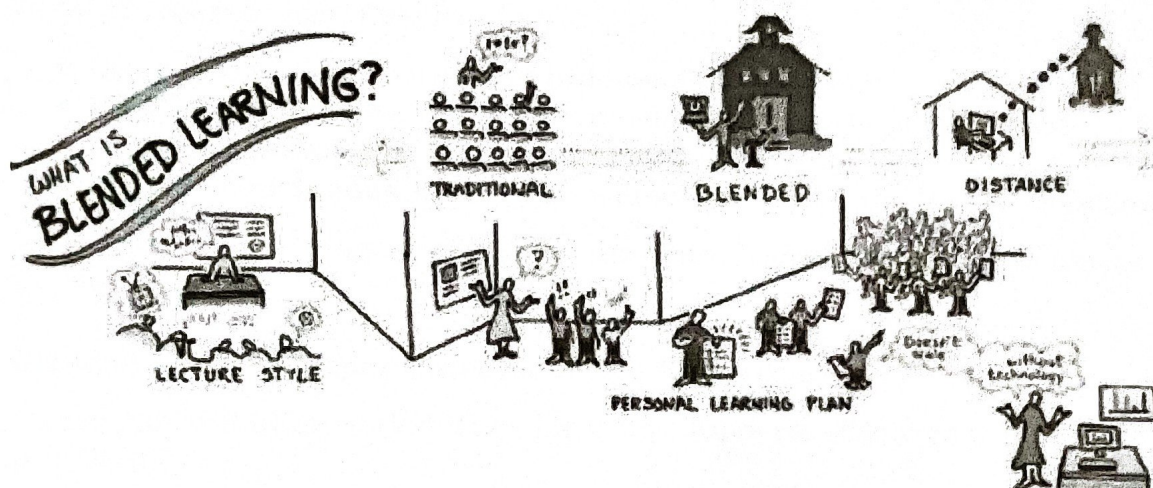
In the context of Open Elective courses offered through MOOCs such as NPTEL, blended learning involves the integration of **nationally curated online course content** with structured in-class facilitation at the department level. Both students and faculty enroll in the same MOOC course, participate in weekly learning activities and assessments and engage in regular classroom interactions throughout the course duration.

Thus blended learning ensures flexibility, quality content exposure, continuous academic engagement and structured learning supports, making it particularly suitable for MOOC-based Open Elective courses in higher education institutions.





[Source: <https://www.knowledgeworker.com/en/blog/blended-learning-benefits-applications-and-software-required/>]



[Source: <https://www.edtechreview.in/data-statistics/blended-learning-in-the-classroom-statistics-research/>]

A Blended Classroom Learning is a pedagogical approach in which:

- **Teaching and learning** are delivered through a **planned** combination of **face-to-face classroom** instruction and online learning activities
- Online components (recorded lectures, e-content, MOOCs, simulations, discussion forums, assignments, quizzes) are delivered through an LMS or digital platforms
- Face-to-face sessions focus on:
  - i. Concept clarification and doubt resolution
  - ii. Interactive lectures and demonstrations
  - iii. Problem-solving and application-based learning
  - iv. Case studies and real-world examples
  - v. Collaborative learning and group activities
  - vi. Continuous assessment and feedback





This approach integrates the strengths of traditional classroom teaching with the flexibility of online learning, allowing students to learn at their own pace while benefiting from direct faculty interaction.

Blended learning thus enhances student engagement, promotes self-directed learning and supports diverse learning styles, moving beyond the limitations of purely traditional or fully online instruction.

### **Need of Blended Classroom in OBE Philosophy –**

Outcome-Based Education emphasizes active participation, learner responsibility and meaningful learning experiences. The blended learning classroom is essential for MOOC-based Open Electives to –

- Encourage **self-directed** and **independent** learning
- Shift classroom time from content delivery to **active engagement**
- Support **diverse learning** paces among students
- Ensure **continuous academic interaction** during the **MOOC duration**

Thus blended learning strengthens the learner-centric approach envisioned under OBE

### **Blended Learning under Outcome-Based Education**

Under the OBE framework, blended learning supports effective teaching-learning practices by –

- **Promoting** student preparedness before classroom sessions
- **Enabling** active learning through discussions, application and problem-solving
- **Providing** continuous academic mentoring by faculty
- **Ensuring** structured monitoring of learner participation

The emphasis is on learning processes and engagement, rather than on outcome attainment calculations

### **Benefits of Conducting Blended Classroom –**

#### **For Students**

- Access to high-quality content from reputed national institutions
- Flexibility in learning pace and schedule
- Improved understanding through guided classroom interaction
- Exposure to nationally recognized certification
- Development of self-learning and lifelong learning skills





### **For Faculty**

- Transition from traditional teaching to facilitation and mentoring
- Enhanced classroom interaction and engagement
- Professional development through participation in MOOCs
- Better academic monitoring and student support

### **Objectives of Blended Classroom –**

Through this blended classroom approach, students will be able to -

- **Integrate** MOOCs effectively into the Open Elective curriculum
- **Ensure** uniform delivery of Open Elective courses across the department
- **Promote** active, independent and responsible learning
- **Provide** structured academic support during MOOC progression
- **Align** Open Elective teaching with NEP 2020 and learner-centric pedagogy

### **Blended Learning Classroom Activity Process (Step-by-Step) –**

#### **A) Phase-1: Pre-Semester Selection & Approval**

Before the commencement of the academic semester, the following steps must be completed:

- i) **Course identification:** The department should identify a list of **12-week NPTEL/ SWAYAM** courses that align with the current curriculum or provide emerging technology specializations. A brainstorming session should be conducted at the department level considering the suggestions given by the faculty members and two finalized courses to be shared with the Office of Dean Academics. The list has to be then submitted to the Office of Dean Academics for the approval.
- ii) **Faculty Mapping:** For every selected MOOC, a **“Faculty Facilitator”** from the department will be officially assigned.
- iii) **Approval from Authorities:** A formal proposal including the course list and corresponding faculty facilitator to be submitted for the approval.

#### **B) Phase-2: Enrollment & Registration**

To ensure 100% compliance and tracking, the registration process is centralized (at the institute level) –

Entity	Responsibility
<b>Faculty Facilitator</b>	Must register for the course and the certification exam to maintain peer-level expertise



<b>Students</b>	Must register using their email IDs and select the "Local Chapter" to allow data tracking and select your faculty facilitator as your "Mentor"
<b>Department NPTEL Coordinator</b>	Maintain a master database of enrolled students and their NPTEL enrolment numbers

**C) Phase-3: The Blended Instruction Model (Week 1 – 12)**

Facilitator-Led Weekly Facilitation (**3 hours per week as per timetable**)

**(a) Quick Recap –**

- a. Facilitator summarizes –
  - i. The key concepts covered in the week's NPTEL videos
  - ii. Important formulas, algorithms or any takeaways

*The focus should be on reinforcement, not re-teaching the entire content*

**(b) Doubt Clearing –**

- a. Students raise doubts related to video lectures
- b. Students raise doubts related to assignments or quizzes
- c. Mentor addresses common doubts first followed by individual queries

**(c) Active Learning Activity –**

- a. Mentor conducts any one or two of the following –
  - i. Short quiz (MCQs or concept-based questions)
  - ii. Problem-solving or numerical exercise
  - iii. Case study discussion
  - iv. Coding or design task (wherever applicable)
  - v. Group discussion or peer explanation
- b. Activities to be directly mapped to the current NPTEL module

**(d) Summary and Instructions –**

- a. Mentor highlights –
  - i. Common mistakes observed in assignments
  - ii. Key learning points from the activity
- b. Shares instructions for –
  - i. Next week's NPTEL videos
  - ii. Upcoming assignment deadlines

**D) Phase-4: Monitoring & Internal Assessment**

To ensure students do not lag behind the 12-week schedule, the following monitoring policy is enforced:

- i) **Weekly progress audits:** Students must submit a screenshot or digital proof of their weekly assignment submission to the facilitator
- ii) **Preserving the marks:** The facilitator should keep records of the score received weekly by the students



- iii) **Early warning system:** Facilitator can make sure the progress of the student via tracking the weekly marks. If the student's missing two or more consecutive assignments will be flagged for mandatory counselling with the facilitator. Facilitator must make sure the students go through the weekly assessment conducted on the NPTEL/ SWAYAM portal and record their marks

**E) Phase-5: Final Evaluation**

- i) **Proctored Examinations:** Students must appear for the final physical exam at the designated remote center
- ii) **Certification requirement:** Only students receiving a "Successfully Completed" or higher (Elite/ Silver/ Gold) certificate will be eligible for credit transfer
- iii) **Credit equivalence:** Upon submission of the NPTEL certificate, the department will process the marks and credits according to the institute credit transfer policy

**Resource Requirements**

- Access to MOOC platforms such as NPTEL for students and faculty
- Institutional/ Department Learning Management System (LMS), if available, for communication and tracking
- Access to supplementary digital content such as PDFs, presentations and reference materials
- Faculty registration to the same MOOC course as students
- Time allocation in the timetable for facilitation sessions
- Academic mentoring support for bright and weak learners
- Technical support for classroom and digital infrastructure

**Roles Summary**

**Faculty (Facilitator)**

- Register for and complete the MOOC along with students
- Plan and conduct weekly facilitation sessions
- Monitor participation and progress
- Provide academic guidance and mentoring
- Maintain necessary academic records

**Students**

- Register for the prescribed MOOC
- Complete weekly online assessments on time
- Attend facilitation sessions regularly
- Appear for the final proctored examination



**Department of Computer Science and Engineering**  
[Internet of Things and Cyber Security including Blockchain Technology]  
(NAAC A++ Grade Accredited Institute, ISO 9001: 2015 Certified)

### Department

- Approve suitable MOOCs for Open Elective from Office of Dean Academics
- Provide timetable and infrastructure support
- Ensure smooth and uniform implementation

### Additional Guidelines for Faculty (Important) -

- Faculty must actively engage with MOOC content throughout the course
- Classroom sessions should focus on facilitation, not repetition of videos
- Active learning strategies must be encouraged
- Regular interaction with students should be ensured
- Academic integrity and discipline must be maintained

### Recommendations to Strengthen Implementation -

To further enhance effectiveness:

- Conduct orientation sessions for students and faculty before course commencement
- Encourage peer learning and group-based activities
- Periodically review student engagement and participation
- Recognize successful completion by students and faculty

### Compliance & Review -

- This SOP shall be mandatory for all third year MOOC-based Open Elective courses
- Compliance shall be monitored at the department level
- The SOP shall be reviewed periodically and updated as required

### Conclusion -

The implementation of Blended Learning for Open Elective courses through MOOCs such as NPTEL represents a strategic shift towards learner-centric, flexible and quality-driven education. By combining **nationally acclaimed online course** content with structured in-class facilitation, this model ensures that students benefit from both self-paced learning and continuous academic guidance.

Through this SOP, the department establishes a clear and standardized framework for planning, execution, monitoring and review of MOOC-based Open Elective courses. The role of the faculty as a facilitator ensures sustained student



engagement, timely clarification of concepts, mentoring support and academic discipline throughout the 12-week course duration.

The blended learning approach not only enhances student responsibility and independent learning skills but also promotes active classroom interaction, peer learning and deeper conceptual understanding. For the department, it ensures uniform implementation, ease of monitoring and alignment with modern pedagogical practices advocated by NEP 2020 and Outcome-Based Education philosophy.

By adhering to this SOP, the department commits to continuous improvement in teaching-learning practices, effective utilization of digital learning platforms and holistic development of learners through well-structured blended learning environments.


This initiative is crucial for:

- Academic excellence
- Student readiness
- Accreditation compliance


*Incomplete documentation may lead to non-compliance during audits*

**Date:** 12<sup>th</sup> January, 2026


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