

DR. A.P.J. ABDUL KALAM TECHNICAL UNIVERSITY

LUCKNOW, UTTAR PRADESH



COURSE STRUCTURE & EVALUATION SCHEME

of

Bachelor of Technology (B.Tech.)

First Year

(Along with the SOPs for General Proficiency, Innovation & Design Thinking Lab, and AICTE Activity Points)

AS PER AICTE MODEL CURRICULUM & NEP2020

(Effective from the Academic Session: 2026-27)

Dr. APJ Abdul Kalam Technical University, Lucknow

Dr. A.P.J. Abdul Kalam Technical University, Lucknow- Uttar Pradesh
Bachelor of Technology
B.TECH. FIRST YEAR, SEMESTER-I
Scheme of Teaching and Examinations (w.e.f. 2026-27)

I Semester		3- WEEKS STUDENT INDUCTION PROGRAMME IN THE BEGINNING OF THE SESSION AS PER AICTE GUIDELINES										
Sr. No.	Course Category	Course Code	Course Title	Teaching Department	L	T	P	NCrF Hrs.	IA (TS/PS) (CT+TA)	EA (TE/PE)	Total Marks (IA+EA)	Credits
1	BSC	AAS101/ AAS102	Applied Physics/ Applied Chemistry (Both are Stream Specific)	AS&H	3	0	0	45	30	70	100	03
2	BSC	AAS103	Applied Mathematics-I (Stream Specific)	AS&H	3	1	0	60	30	70	100	04
3	ESC	AEE101/ AEC101	Fundamentals of Electrical Engineering / Fundamentals of Electronics Engineering (Both are Stream Specific)	EE/ECE	2	1	0	45	30	70	100	03
4	ESC	ACS101	Programming Languages (Common to all)	CSE	2	1	0	45	30	70	100	03
5	HSMC	AAS104/ AAS105	Introduction to Indian Knowledge System/ Professional Communication & Technical Writing (Both Common to all)	AS&H	2	0	0	30	30	70	100	02
6	ESC	AAI101/ AME101	Introduction to AI & Prompt Engineering (Common to All)/ Fundamentals of Mechanical Engineering (Stream Specific)	Respective Deptt./ ME	2	0	0	30	30	70	100	02
7	BSC	AAS151/ AAS152	Applied Physics Lab (Common to all)/ Applied Chemistry Lab	AS&H	0	0	2	30	50	50	100	01

			(Stream Specific)									
8	ESC	AEE151/ AEC151	Electrical Engineering Lab / Electronics Engineering Lab (Both are Stream Specific)	EE / ECE	0	0	2	30	50	50	100	01
9	ESC/ SDC	ACE151/ AID151	Computer-Aided Engineering Drawing Lab (Stream Specific) / Innovation & Design Thinking Lab (Project-Based Learning) (Common to all)	CE/ Respective Engg.	0	1	2	45	50	50	100	02
10	BSC/ NCMC	AAS153/ AAC101	Language Lab / Environment & Sustainability (Both Common to all)	AS&H	0	0	2	30	50	50	100	-
					2	0	0	30	30	70	100	-
11	NCMC	AGP151	General Proficiency	Respective Deptt.	0	0	2	30	50	—	50	-
				Total	16	04	10	450	330	570	900	21

AICTE Activity Points (Mandatory)(i) Students must earn **100** activity points between Semester 1 to 8

(ii) Mandatory requirement for award of degree

Course Category Abbreviations: **BSC** – Basic Science Course; **ESC** – Engineering Science Course; **PSC** – Programme Specific Course; **AEC** – Ability Enhancement Course; **NCMC** – Non-Credit Mandatory Course; **SDC** – Skill Development Course; **HSMC** – Humanities, Social Science & Management Course; **AS&H**– Applied Science and Humanities,

Applied Mathematics-I (Stream Specific Course) AAS103A-AAS103H		Applied Physics with its Lab (Stream Specific Course); Lab is common to All AAS101A-AAS102I	
Course Code	Course Name	Course Code	Course Name
AAS103A	Differential Calculus and Linear Algebra (CE Stream)	AAS101A	Physics for Sustainable Structural Systems (CE stream)
AAS103B	Differential Calculus and Linear Algebra (ME Stream)	AAS101B	Physics of Materials (ME stream)
AAS103C	Differential Calculus and Linear Algebra (EE & ECE Stream)	AAS101C	Quantum Physics and Electronic Sensors (ECE stream)
AAS103D	Calculus and Linear Algebra (CSE Stream)	AAS101D	Physics of Electrical Engineering Materials (EE stream)
AAS103E	Calculus and Linear Algebra (TX Stream)	AAS101E	Quantum Physics and Applications (CSE stream)

AAS103F	Calculus and Linear Algebra (Biotechnology Stream)	AAS101F	Physics of Materials and Biomaterials (Biotechnology Stream)
AAS103G	Differential Calculus and Linear Algebra (Chemical Engineering Stream)	AAS101G	Physics of Process Engineering Materials (Chemical Engineering Stream)
AAS103H	Differential Calculus and Linear Algebra (Agricultural Engineering Stream)	AAS101H	Physics of Agricultural Systems and Environment (Agricultural Engineering Stream)
		AAS101I	Physics of Fibres and Textile Materials (Textile Engineering Stream)
Computer-Aided Engineering Drawing (Stream Specific Course) ACE151A-ACE151I		Applied Chemistry with its Lab (Stream Specific Course) AAS102A-AAS102H	
Course Code	Course Name	Course Code	Course Name
ACE151A	Computer-Aided Engineering Drawing (CE Stream)	AAS102A	Applied Chemistry for Sustainable Structure & Material Design (CE Stream)
ACE151B	Computer-Aided Engineering Drawing (ME Stream)	AAS102B	Applied Chemistry for Advanced Metal Protection and Sustainable Energy Systems (ME Stream)
ACE151C	Computer-Aided Engineering Drawing (ECE Stream)	AAS102C	Applied Chemistry for Emerging Electronics and Futuristic Devices (EE & ECE Stream)
ACE151D	Computer-Aided Engineering Drawing (EE Stream)	AAS102D	Applied Chemistry for Smart Systems (CSE Stream)
ACE151E	Computer-Aided Engineering Drawing (CSE Stream)	AAS102E	Applied Chemistry for Fibres, Polymers and Sustainable Textiles (TX Stream)
ACE151F	Computer-Aided Engineering Drawing (CH Stream)	AAS102F	Applied Chemistry for Biomolecules and Bioprocess Systems (Biotechnology Stream)
ACE151G	Computer-Aided Engineering Drawing (BT Stream)	AAS102G	Applied Chemistry for Process Engineering and Industrial Applications (CH Stream)
ACE151H	Computer-Aided Engineering Drawing (AG Stream)	AAS102H	Applied Chemistry for Soil, Water and Agro Systems (Agricultural Engineering Stream)
ACE151I	Computer-Aided Engineering Drawing (TX Stream)		
Fundamentals of Electrical Engineering with its Lab (Stream Specific Course) AEE101A-AEE101C		Fundamentals of Electronics Engineering with its Lab (Stream Specific Course) AEC101A-AEC101C	
Course Code	Course Name	Course Code	Course Name
AEE101A	Fundamentals of Electrical Engineering (CSE, ECE, EE Stream)	AEC101A	Fundamentals of Electronics Engineering (CSE, ECE, EE Stream)
AEE101B	Fundamentals of Electrical Engineering (ME, CE, CH, TX Stream)	AEC101B	Fundamentals of Electronics Engineering (ME, CE, CH, TX Stream)

AEE101C	Fundamentals of Electrical Engineering (BT, AG Stream)	AEC101C	Fundamentals of Electronics Engineering (BT, AG Stream)
Fundamentals of Mechanical Engineering (Stream Specific Course) AME101A-AME101D			
Course Code	Course Name		
AME101A	Fundamentals of Mechanical Engineering (CSE, ECE, EE Stream)		
AME101B	Fundamentals of Mechanical Engineering (ME, CE Stream)		
AME101C	Fundamentals of Mechanical Engineering (CH, BT, TX Stream)		
AME101D	Fundamentals of Mechanical Engineering (AG Stream)		

UG Programmes under Each Stream with Codes**UG Programmes Stream-wise Classification**

Sr. No.	Stream	Branches
1	Civil Engineering Stream (CE)	Civil Engineering, Environmental Engineering
2	Mechanical Engineering Stream (ME)	Mechanical Engineering, Automobile Engineering, Aeronautical Engineering, Industrial Production Engineering, Manufacturing Technology, Mining Engineering, Mechanical Engineering (WP)
3	Electrical Engineering Stream (EE)	Electrical Engineering, Electrical & Electronics Engineering, Electrical & Computer Engineering, Electrical Engineering (WP)
4	Electronics Engineering Stream (ECE)	Electronics Engineering, Electronics and Communication Engineering, Electronics and Communication (Advanced Communication Technology), Electronics Engineering (VLSI Design and Technology), Electronics and Instrumentation Engineering, Instrumentation and Control Engineering, Electronic and Computer Engineering
5	Computer Science & Engineering Stream (CSE)	Computer Science and Engineering, Computer Science, Computer Engineering, Information Technology, Computer Science and Information Technology, Computer Science & Technology, Computer Science and Design, Computer Science and Engineering (Hindi), Computer Science and Engineering (Artificial Intelligence), Computer Science and Engineering (Artificial Intelligence & Machine Learning), Artificial Intelligence and Machine Learning, Artificial Intelligence (AI) and Data Science, Computer Science and Engineering (Data Science), Computer Science & Engineering (Cyber Security), Computer Science and Engineering (Internet of Things), Cyber Security, Data Science, Computer Science and Engineering (WP)
6	Textile Engineering Stream (TX)	Textile Technology, Handloom & Textile Technology, Carpet & Textile Technology
7	Biotechnology Stream (BT)	Biotechnology, Biomedical Engineering, Bioinformatics
8	Chemical Engineering (CH)	Chemical Engineering, Plastic Engineering, Food Technology
9	Agricultural Engineering (AG)	Agricultural Engineering

Dr. A.P.J. Abdul Kalam Technical University, Lucknow- Uttar Pradesh

Bachelor of Technology

B.TECH. FIRST YEAR, SEMESTER-II**Scheme of Teaching and Examinations (w.e.f. 2026-27)**

II Semester												
Sr. No.	Course Category	Course Code	Course Title	Teaching Department	L	T	P	NCrF Hrs.	IA (TS/PS) (CT+TA)	EA (TE/PE)	Total Marks (IA+EA)	Credits
1	BSC	AAS201/ AAS202	Applied Physics/ Applied Chemistry (Both are Stream Specific)	AS&H	3	0	0	45	30	70	100	03
2	BSC	AAS203	Applied Mathematics-II (Stream Specific)	AS&H	3	1	0	60	30	70	100	04
3	ESC	AEE201/ AEC201	Fundamentals of Electrical Engineering / Fundamentals of Electronics Engineering (Both are Stream Specific)	Respective Engg. Deptt.	2	1	0	45	30	70	100	03
4	ESC	ACS201	Essentials of Data Structure (Common to all)	CSE	2	1	0	45	30	70	100	03
5	HSMC	AAS204/ AAS205	Introduction to Indian Knowledge System /Professional Communication & Technical Writing (Both Common to all)	AS&H	2	0	0	30	30	70	100	02
6	ESC	AAI201/ AME201	Introduction to AI & Prompt Engineering (Common to all)/ Fundamentals of Mechanical Engineering (Stream Specific)	AS&H/ Respective Engg. Deptt.	2	0	0	30	30	70	100	02
7	BSC	AAS251/ AAS252	Applied Physics Lab (Common to all)/ Applied Chemistry Lab (Stream Specific)	AS&H	0	0	2	30	50	50	100	01

8	ESC	AEE251/ AEC251	Electrical Engineering Lab /Electronics Engineering Lab (Both are Stream Specific)	EE Deptt. / ECE Deptt.	0	0	2	30	50	50	100	01
9	ESC/ SDC	ACE251/ AID251	Computer-Aided Engineering Drawing Lab (Stream Specific)/ Innovation & Design Thinking Lab (Project-Based Learning) (Common to all)	CE Deptt./ Respective Engg. Deptt.	0	1	2	45	50	50	100	02
10	BSC/ NCMC	AAS253/ AAC201	Language Lab /Environment & Sustainability (Both Common to all)	AS&H	0	0	2	30	50	50	100	-
					2	0	0	30	30	70	100	-
11	NCMC	AGP251	General Proficiency	Respective Deptt.	0	0	2	30	50	—	50	-
Total					16	04	10	450	330	570	900	21

Course Category Abbreviations:

BSC – Basic Science Course; **ESC** – Engineering Science Course; **PSC** – Programme Specific Course; **AEC** – Ability Enhancement Course; **NMC** – Non-Credit Mandatory Course; **SDC** – Skill Development Course; **HSMC** – Humanities, Social Science & Management Course; **AS&H** – Applied Science and Humanities

Applied Mathematics-II (Stream Specific Course) AAS203A-AAS203H		Applied Physics with its Lab (Stream Specific Course); Lab is common to All AAS201A-AAS202I	
Course Code	Course Name	Course Code	Course Name
AAS203A	Differential Calculus and Numerical Methods (CE Stream)	AAS201A	Physics for Sustainable Structural Systems (CE stream)
AAS203B	Multivariable Calculus and Numerical Methods (ME Stream)	AAS201B	Physics of Materials (ME stream)
AAS203C	Calculus, Laplace Transform and Numerical Techniques (EE & ECE Stream)	AAS201C	Quantum Physics and Electronic Sensors (ECE stream)
AAS203D	Numerical Methods (CSE Stream)	AAS201D	Physics of Electrical Engineering Materials (EE stream)
AAS203E	Calculus and Numerical Method (TX Stream)	AAS201E	Quantum Physics and Applications (CSE stream)
AAS203F	Calculus and Numerical Methods (Biotechnology Stream)	AAS201F	Physics of Materials and Biomaterials (Biotechnology Stream)
AAS203G	Multivariable Calculus and Numerical Methods (Chemical Engineering Stream)	AAS201G	Physics of Process Engineering Materials (Chemical Engineering Stream)
AAS203H	Differential Calculus and Numerical Methods (Agricultural Engineering Stream)	AAS201H	Physics of Agricultural Systems and Environment (Agricultural Engineering Stream)
		AAS201I	Physics of Fibres and Textile Materials (Textile Engineering Stream)
Computer-Aided Engineering Drawing (Stream Specific Course) ACE251A-ACE251I		Applied Chemistry with its Lab (Stream Specific Course) AAS202A-AAS202H	
Course Code	Course Name	Course Code	Course Name
ACE251A	Computer-Aided Engineering Drawing (CE Stream)	AAS202A	Applied Chemistry for Sustainable Structure & Material Design (CE Stream)
ACE251B	Computer-Aided Engineering Drawing (ME Stream)	AAS202B	Applied Chemistry for Advanced Metal Protection and Sustainable Energy Systems (ME Stream)
ACE251C	Computer-Aided Engineering Drawing (ECE Stream)	AAS202C	Applied Chemistry for Emerging Electronics and Futuristic Devices (EE & ECE Stream)
ACE251D	Computer-Aided Engineering Drawing (EE Stream)	AAS202D	Applied Chemistry for Smart Systems (CSE Stream)
ACE251E	Computer-Aided Engineering Drawing (CSE Stream)	AAS202E	Applied Chemistry for Fibres, Polymers and Sustainable Textiles (TX Stream)

ACE251F	Computer-Aided Engineering Drawing (CH Stream)	AAS202F	Applied Chemistry for Biomolecules and Bioprocess Systems (Biotechnology Stream)
ACE251G	Computer-Aided Engineering Drawing (BT Stream)	AAS202G	Applied Chemistry for Process Engineering and Industrial Applications (CH Stream)
ACE251H	Computer-Aided Engineering Drawing (AG Stream)	AAS202H	Applied Chemistry for Soil, Water and Agro Systems (Agricultural Engineering Stream)
ACE251I	Computer-Aided Engineering Drawing (TX Stream)		
Fundamentals of Electrical Engineering with its Lab (Stream Specific Course) AEE201A-AEE201C		Fundamentals of Electronics Engineering with its Lab (Stream Specific Course) AEC201A-AEC201C	
Course Code	Course Name	Course Code	Course Name
AEE201A	Fundamentals of Electrical Engineering (CSE, ECE, EE Stream)	AEC201A	Fundamentals of Electronics Engineering (CSE, ECE, EE Stream)
AEE201B	Fundamentals of Electrical Engineering (ME, CE, CH, TX Stream)	AEC201B	Fundamentals of Electronics Engineering (ME, CE, CH, TX Stream)
AEE201C	Fundamentals of Electrical Engineering (BT, AG Stream)	AEC201C	Fundamentals of Electronics Engineering (BT, AG Stream)
Fundamentals of Mechanical Engineering (Stream Specific Course) AME201A-AME201D			
Course Code	Course Name		
AME201A	Fundamentals of Mechanical Engineering (CSE, ECE, EE Stream)		
AME201B	Fundamentals of Mechanical Engineering (ME, CE Stream)		
AME201C	Fundamentals of Mechanical Engineering (BT, CH, TX Stream)		
AME201D	Fundamentals of Mechanical Engineering (AG Stream)		

The **Student Induction Programme** (SIP), initiated by the All India Council for Technical Education (AICTE), is designed to help newly admitted students in technical institutions transition smoothly into the higher education environment. It aims to familiarize students with the institutional culture, foster connections with peers and faculty, and provide a foundation for holistic learning. Activities under SIP may include Physical Activities, Creative Arts, Universal Human Values, Literary Events, Proficiency Modules. Lectures shall be by Eminent Personalities, Local Area Visits, Department/Branch Familiarization, and Innovation-related sessions.

AICTE Activity Points Requirement for B.Tech. Programmes

As per AICTE guidelines (refer Chapter 6 – *AICTE Activity Point Program, Model Internship Guidelines*), in addition to academic requirements, students must earn a specified number of Activity Points to be eligible for the award of their degree.

- **Regular** students admitted to a 4-year degree program must earn **100 Activity Points**.
- **Lateral** entry students (joining from the second year) must earn **75 Activity Points**.
- **Students** transferred from other universities directly into the fifth semester must earn **50 Activity Points** from the date of entry into AKTU.

These Activity Points are **non-credit** and will not be considered for **the SGPA/CGPA** or be used for **vertical progression**. However, they are mandatory for the **award of the degree**, and the points earned will be reflected on the **eighth semester Grade Card**.

The hours spent for earning the activity points shall not be counted for regular attendance requirements. Students can accumulate these points at any time during their program, including on weekends, holidays, and vacations starting from the year of admission, provided they meet the minimum hours of engagement prescribed for each activity.

If a student fails to earn the required Activity Points, the eighth-semester Grade Card will be withheld until the requirement is fulfilled. Consequently, the degree will be awarded only after the Grade Card has been released

STANDARD OPERATING PROCEDURE (SoP) for General Proficiency

1. Title

Standard Operating Procedure (SoP) for implementation of **General Proficiency**

2. Objective

- To promote **holistic development** of students beyond academic learning
- To inculcate **discipline, ethical values, and social responsibility**
- To enhance **communication, leadership, and teamwork skills**
- To align student development with the vision of **NEP 2020**
- To prepare students for **professional and societal challenges**

3. Scope

This SoP shall be applicable to:

- All **undergraduate (B.Tech) students**
- All **affiliated and constituent institutions** of the University
- All semesters (or as notified by the University)

4. Course Structure

Parameter	Details
Course Name	General Proficiency
Marks	50
Credits	Non-Credit
Nature	Mandatory
Type	Internal Assessment (Non-Theory)

5. Components of Assessment

Category	Marks	Key Evaluation Parameters
Discipline & Ethics	10	Attendance, punctuality, adherence to rules, respect for faculty and peers, ethical behavior
Communication & Leadership Skills	10	Language proficiency, confidence, presentation skills, leadership, problem-solving
Co-curricular Activities	10	Participation in debates, seminars, sports, cultural events, social service
Teamwork & Collaboration	10	Group participation, coordination, cooperation, helping attitude

Professional & Technical Skills	10	Practical knowledge, digital literacy, innovation, creativity
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6. Evaluation Process

- Evaluation shall be conducted **semester-wise**
- Assessment shall be based on:
 - ✓ Continuous observation by faculty
 - ✓ Participation in activities
 - ✓ Performance in institutional and external events
- Students may be given opportunity for:
 - ✓ **Self-assessment**
 - ✓ **Faculty assessment**

7. Implementation Mechanism

- Each department shall nominate a **Faculty Coordinator**
- A **Proficiency Assessment Committee** may be constituted at institute level
- Records shall be maintained in:
 - ✓ Digital format
 - ✓ Activity log / portfolio of students

8. Documentation & Record Keeping

- Students shall maintain:
 - ✓ Participation certificates
 - ✓ Activity reports
 - ✓ Portfolio of achievements
- Institutes shall maintain:
 - ✓ Attendance and evaluation records
 - ✓ Consolidated marks sheet

9. Grading & Reporting

- Marks shall be awarded out of **50**
- The score shall be:
 - ✓ Reflected in **Grade Card**

- ✓ Considered for **overall student evaluation (non-SGPA component, if applicable)**

10. Alignment with NEP 2020

The course aligns with:

- **Holistic Development (Para 4.4)**
- **Co-curricular Integration (Para 4.8)**
- **Ethics & Value-based Education (Para 4.27)**
- **Life Skills & Multidisciplinary Learning (Para 11.5)**
- **Student Well-being (Para 4.42)**

11. Expected Outcomes

Students will be able to:

- Demonstrate **discipline and ethical behavior**
- Exhibit **effective communication and leadership skills**
- Participate actively in **co-curricular and social activities**
- Work effectively in **teams**
- Apply **technical and professional skills in real-life situations**

12. Review and Monitoring

- Periodic review shall be conducted by:
 - ✓ **Departmental Committee**
 - ✓ **Academic Council (if required)**
- Feedback from students and faculty shall be considered for improvement

STANDARD OPERATING PROCEDURE (SoP)**Innovation & Design Thinking Lab (AID151/AID251) — Conduct Guidelines**

Purpose: This SoP provides a standard, uniform procedure for conducting the Innovation & Design Thinking Lab across all departments, ensuring consistent delivery, fair assessment, and achievement of course outcomes in line with the AICTE Design Thinking framework.

1. Team Formation

1. Students are organised into teams of 4–5 members at the start of the semester.
2. Teams should be interdisciplinary/mixed wherever possible to encourage diverse thinking.
3. Each team elects a Team Lead (role rotates across project stages so every member leads once).
4. Each team maintains a shared Design Journal (physical logbook or digital document) from Day 1.

2. Weekly Session Structure (1 hr Tutorial + 2 hrs Studio)

1. Tutorial hour: instructor introduces the design-thinking concept/tool for the week with examples.
2. Studio hours (2 hrs): teams apply the tool to their own project under faculty facilitation.
3. The faculty acts as a facilitator/mentor, NOT a lecturer — guiding, questioning, and unblocking teams.
4. Every session ends with a 5-minute stand-up where each team states progress and next steps.
5. All work (notes, sketches, photos) is recorded in the team Design Journal the same day.

3. Stage-Gate Milestones (Aligned to 5 Design Thinking Stages)

Week	Design Thinking Stage	Deliverable / Gate
1–2	Introduction + Team formation	Team formed, problem area chosen, project charter
3–5	Empathize	User research, interviews, empathy map, personas
6–7	Define	Refined problem statement (POV) + How-Might-We questions

8–9	Ideate	Brainstorm record, shortlisted concept, concept sketch
10–12	Prototype	Low-cost working prototype / model built
13–14	Test & Iterate	User testing feedback + at least one iteration
15	Pitch	Final pitch, prototype demo, design journal submission

4. Role of Faculty Facilitator

1. Facilitate, do not dictate — let teams discover solutions themselves.
2. Ensure every team member participates; prevent free-riding through individual check-ins.
3. Provide timely feedback at each stage-gate before allowing progress to the next stage.
4. Arrange access to basic prototyping materials and tools (see Section 6).
5. Maintain a facilitation log recording each team's progress and individual contributions.
6. Invite an industry expert / entrepreneur / senior alumnus for the final pitch wherever possible.

5. Assessment Procedure

1. Internal Assessment (50 marks) is continuous and stage-wise, per the IA rubric in the syllabus.
2. Each stage-gate deliverable is assessed and recorded before the team proceeds.
3. Individual marks may vary within a team based on documented individual contribution.
4. External Assessment (50 marks) is conducted at semester end: final prototype demo + pitch + viva by an external examiner.
5. A team that has not cleared at least the Prototype stage-gate is not eligible for the final external assessment.
6. Design Journal is mandatory for both IA and EA — teams without a journal cannot be assessed.

6. Required Infrastructure & Materials

1. Design studio / open classroom with movable furniture for team work.
2. Whiteboards / chart paper, sticky notes (Post-its), markers, sketch pens.
3. Basic prototyping materials: cardboard, chart paper, glue, scissors, clay, thermocol, tape, craft materials.
4. Access to a computer lab with free tools — Tinkercad, Canva, Figma, Google Workspace.

5. Access (shared) to a 3D printer / maker-space / tinkering lab where available (ATL/IIC).
6. Projector / smart board for pitches and concept sharing.

7. Safety, Ethics & Academic Integrity

1. Students must handle tools (cutters, glue guns, 3D printers) safely and under supervision.
2. User research must be respectful; informed consent must be taken for interviews and photographs.
3. Projects must be original team work; plagiarism of existing products without acknowledgement is not permitted.
4. Teams are encouraged to consider social impact, inclusivity, and sustainability in their solutions.
5. Any promising innovation may be forwarded to the Institution's Innovation Council (IIC) / incubation cell for further support.

8. Documentation & Records to be Maintained

1. Team-wise Design Journal / Portfolio (empathy maps, sketches, photos, test notes).
2. Faculty facilitation log (per team, per session).
3. Stage-gate assessment sheets with marks.
4. Final project report (short) + pitch deck + prototype photographs.
5. Course file: syllabus, SOP, CO-PO mapping, sample deliverables, and result analysis.

Note: This SOP is aligned with the AICTE model curriculum on Design Thinking & Innovation and the objectives of the Institution's Innovation Council (IIC) under the Ministry of Education's Innovation Cell. Departments may adapt studio scheduling to local timetable while retaining the five-stage design-thinking flow and stage-gate assessment.

STANDARD OPERATING PROCEDURE (SoP) for Academic Activity Points
(AICTE Activity Point Programme)

1. Title

Standard Operating Procedure (SoP) for implementation of **Academic Activity Points for Award of Degree**

2. Objective

- To promote **holistic development** of students beyond academics
- To encourage **community engagement, innovation, and social responsibility**
- To develop **leadership, teamwork, and entrepreneurial skills**
- To align with **AICTE guidelines and NEP 2020**

3. Scope

This SoP shall be applicable to:

- All **B.Tech students**
- All **affiliated and constituent colleges**
- Students admitted under **regular, lateral entry, and transfer categories**

4. Activity Points Requirement

Student Category	Minimum Activity Points
Regular Students (4-Year Programme)	100
Lateral Entry Students	75
Transferred Students	50

5. Nature of Activity Points

- **Mandatory for award of degree**
- **Non-credit** (not counted in SGPA/CGPA)
- Reflected in **final semester grade card**

6. Activity Categories and Approved Activities

Activity Summary Table

Sl. No.	Activity Head	Minimum Duration (Weeks)	Hours	Maximum Points	Evaluated By

				per Activity	
1	Helping local schools to improve results and enhance enrolment	2	80-90	20	Coordinator NSS / Youth Red Cross/ College Internal Compliant Committee / Mentor
2	Preparing business proposal for village income enhancement	2	80-90	20	Same
3	Sustainable water management system development	2	80-90	20	Same
4	Tourism promotion initiatives	2	80-90	20	Same
5	Promotion of appropriate technologies	2	80-90	20	Same
6	Energy conservation initiatives	2	80-90	20	Same
7	Skill development for rural population	2	80-90	20	Same
8	Digital financial inclusion initiatives	2	80-90	20	Same
9	Women empowerment awareness programmes	2	80-90	20	Same
10	Waste management system development	2	80-90	20	Same
11	Marketing support for rural produce	2	80-90	20	Same
12	Food preservation and packaging	2	80-90	20	Same
13	Automation of local activities	2	80-90	20	Same
14	Rural awareness programmes	2	80-90	20	Same
15	Participation in national initiatives (Swachh Bharat etc.)	2	80-90	20	Same
16	Rainwater harvesting awareness programmes	2	80-90	20	Same

7. Activity Duration and Completion

- Minimum duration per activity: **2 weeks**
- Minimum engagement: **80–90 hours**
- Activities can be completed during:
 - ✓ Weekends
 - ✓ Vacations
 - ✓ Semester breaks

8. Evaluation Mechanism

- Evaluation shall be carried out by:
 - ✓ Faculty Mentor
 - ✓ NSS / Activity Coordinator
 - ✓ Institutional Committee
- Assessment criteria:
 - ✓ Participation
 - ✓ Quality of work
 - ✓ Impact and outcomes

9. Implementation Framework

- Each institute shall appoint:
 - ✓ **Activity Point Coordinator**
 - ✓ **Monitoring Committee**
- Responsibilities:
 - ✓ Approve activities
 - ✓ Monitor student progress
 - ✓ Validate submitted documents

10. Documentation Requirements

Students must maintain:

- Activity reports
- Certificates
- Proof of participation (photos/videos)
- Mentor verification

Institutes must maintain:

- Student-wise records
- Consolidated activity reports

11. Submission and Reporting

- Institutes shall submit **consolidated reports to the University**
- Activity points shall be verified before **final semester completion**
- Points shall be reflected in the **Grade Card**

12. Compliance Requirement

- Earning required Activity Points is **mandatory for award of degree**
- In case of non-compliance:
 - ✓ **Degree shall not be awarded**
 - ✓ Final Grade Card may be withheld

13. Monitoring and Review

- Periodic review at:
 - ✓ Department level
 - ✓ Institute level
- University may conduct:
 - ✓ Audits
 - ✓ Compliance checks

14. Expected Outcomes

Students will:

- Develop **social responsibility and ethical values**
- Gain **practical exposure and real-world experience**
- Improve **leadership and teamwork skills**
- Enhance **employability and innovation capability**

15. Alignment with NEP 2020

- Holistic and multidisciplinary education
- Skill-based and experiential learning
- Community engagement
- Value-based education