

## About NCAM

**National Centre for Additive Manufacturing (NCAM)** has been established by the Ministry of Electronics and Information Technology (MeitY), Govt. of India and ITE&C Department, Govt. of Telangana in partnership with industry. It is established with a vision to develop a comprehensive Additive Manufacturing ecosystem in the country and to position India as a Global AM Manufacturing Hub.

NCAM aims to create and enable a sustainable ecosystem for product innovation in India with emphasis on research, design, development, and testing through collaborative efforts between academia, industry, and government using the disruptive technology of Additive Manufacturing.

To achieve its mandate, the NCAM's initiatives can be broadly categorised under the five pillars of i) skilling, ii) enabling adoption and industry readiness, iii) new product development and indigenization, iv) access to infrastructure and v) R&D and innovation.

## Program Introduction

Additive Manufacturing (AM), also known as 3D printing, is the process of manufacturing an object, layer by layer. It differs from the traditional subtractive manufacturing techniques involving cutting large blocks of material to form the desired object. AM has the potential to transform manufacturing due to design freedom, shape optimisation potential, reduced time-to-market, ease of making changes and industrial sustainability. Furthermore, AM plays a key role in bringing about Industrial Revolution 4.0.

India has an excellent opportunity as the world begins to adopt AM techniques. Additive manufacturing development and adoption can help India in become a leading manufacturing hub. To achieve this, the Ministry of Electronics and Information Technology (MeitY) formulated the 'National Strategy on Additive Manufacturing'.

## **Additive Technology Enhancement Program (ATEP-II) with NCAM**

The primary objective of the Additive Technology Enhancement Program (ATEP-II) of NCAM is to acquaint the participants with the concepts of AM, provide exposure of the various AM technologies, materials science aspect for AM, CAD modelling of AM processes, and their applications in various industry domains. Also, this programme can update the participants about the AM landscape with its latest advancements, opportunities, emerging trends and challenges involved in adoption in India. This programme also aims to provide hands on exposure to the participants on 3D printers and for 3D printing of parts.

### **1. What can be taught?**

- Content on Additive Manufacturing (AM) technologies, design and software, and applications, AM domain advances and challenges and in AM Technologies.
- Applied knowledge/practical session and lab activities related 3D printer set up, CAD designing, materials selection, printer configuration, modifying / customising software, and printing 3D of parts
- Industry specific applications, and market insights, emerging trends and future research areas in AM.
- Any other topic relevant to AM not mentioned above.

### **2. Who can attend?**

Assistant Professors / Associate Professor / Ph. D scholars.

Min/Max Limit - 30/50

At least 70% of participant faculty from outside the organisation/institute must be invited to attend.

**3. FDP Mode: In-house (offline)** for both theory and practical/labs/experiential learning

### **4. Session and pedagogy planning:**

Duration- Six days (Monday to Saturday)

Pedagogy - Collaborative, Experiential, and Outcome-Based Teaching and Learning based live Classroom Sessions, Case Studies, Presentations, discussions, lab sessions, etc.

College/Institute should circulate the programme brochure with NCAM and MeitY + Telangana Logos.

Programme banner must be prepared and displayed with appropriate programme details on it in a prominent place at the programme venue. The suggested training hours (can be modified to suit the program theme and faculty training needs) and session plan are as follows:

- 22.5 hours of teaching in fifteen equal sessions
- 06 hours of practical/labs/experiential learning sessions of one and a half hours each

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➤ 08 hours for Industrial visit.

**Suggestions for the topic coverage and workflow of the sessions:**

- Explain the importance of the topic, conduct case studies for applications, problems / challenges etc: in AM.
- Deliver concepts of technologies, design, production and post processing, applications and emerging trends
- Share real-world applications of the topic
- Ask topical questions at the beginning of the session (rotate)
- Ask key takeaways at the end of session for understanding
- Take feedback must be collected for each session.
- Guest speakers / Trainers from the industry/corporate/research labs can share practical insights of the AM Industry.
- Guest speakers / expert speakers should compulsorily have AM background (60% Industry + 40% Academia)
- No repeat sessions to be conducted

**5. 6 DAY FDP TIME TABLE (Offline 9.30 am – 5.30 pm) (suggestive time table)**

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
9.00 – 9.30 - Inauguration					
9.30 – 11.00 Session I	9.30 – 11.00 Session IV	9.30 – 11.00 Session VII	Industrial Visit	9.30 – 11.00 Session X	9.30 – 11.00 Session XIII
11.00 – 11.30 Tea Break	11.00 – 11.30 Tea Break	11.00 – 11.30 Tea Break		11.00 – 11.30 Tea Break	11.00 – 11.30 Tea Break
11.30 – 1.00 Session II	11.30 – 1.00 Session V	11.30 – 1.00 Session VIII		11.30 – 1.00 Session XI	11.30 – 1.00 Session XIV
1.00 – 2.00 Lunch	1.00 – 2.00 Lunch	1.00 – 2.00 Lunch		1.00 – 2.00 Lunch	1.00 – 2.00 Lunch
2.00 – 3:30 Session III	2.00 – 3:30 Session VI	2.00 – 3:30 Session IX		2.00 – 3:30 Session XII	2.00 – 3:30 Session XV
3:30 – 4:00 Tea break	3:30 – 4:00 Tea break	3:30 – 4:00 Tea break		3:30 – 4:00 Tea break	3:30 to 5:30 Valedictory
4:00 – 5:30 Hands-on training/Lab Session	4:00 – 5:30 Hands-on training/Lab Session	4:00 – 5:30 Hands-on training/Lab Session		4:00 – 5:30 Hands-on training/Lab Session	

Total Sessions = 15 (22.5 hours) (suggestive only)

**6. Expected Outcome**

- Practical learnings on AM technologies.
- Hands-on experience of operating 3D Printer and 3D printing of parts
- Stay updated about the current trends and challenges in the AM Industry
- Get a holistic view of the AM process workflow and its impact on

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business costs and supply chain.

- Understanding of pedagogical tools to be applied toward teaching AM
- Atleast one industrial visit to any prominent Additive Manufacturing Company.

### 7. Host Institute Eligibility Criteria

- Only AICTE-approved institutions/Technical institutions can conduct FDPs.
- Each Institute must submit a completed proposal with a relevant programme title/topic, along with up-to-date and engaging content on Additive Manufacturing that will benefit the faculty.
- A maximum of **two FDP sessions** may be assigned to any internal faculty member.

*\*The proposal shall be assessed by an Expert Committee on a merit basis. The decision of the Competent Authority, NCAM's decision, shall be final in this regard.*

### 8. FDP Funding and Budget Funding

- Rs 3,00,000/- (Rupees three lakhs only per FDP all inclusive)
- First Instalment released will be Rs **1,50,000/-** only (in the 1st tranche)
- The second instalment will be of Rs **1,50,000/-**, to be released after submission of the **mandatory documents as requested by the NCAM Team.** (in the 2<sup>nd</sup> tranche)

SL NO	PARTICULARS	RATE	UNITS / QTY	AMOUNT
1	Honorarium Coordinator	8,000	1	8,000
2	Honorarium to Co- Coordinator	5,000	1	5,000
3	Honorarium for Computer Operators / Lab Technicians	8,000	1	8,000
4	Honorarium to experts (Max. 5,000 per Session)			75,000
5	TA to External Experts engaging sessions			1,00,000
6	Refreshment + Lunch			60,000
7	Hands-on training material, Consumable items and Miscellaneous charges etc. (reimbursed on actual basis)			22,000
8	Industrial Visit (Travel expense & visit charges if any)			22,000
<b>Total</b>				<b>3,00,000</b>

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\*Institute can provide accommodation to the outside participants.

\*Total permissible program budget must not, in any case exceed any of line items provided above.

\*Any amount exceeding the budget needs to be provided for by the Institute/College itself, and the programme quality must not be compromised.

#### **Submission of documents by University/Institution**

- Fund will be disbursed in two instalments for the FDPs. Second instalment will be admissible on actual basis on submission of bills. The coordinator of the FDP is required to submit the receipts of the following documents through the NCAM Coordinator.
- Compulsory online feedback of all the participants is required through link provided by NCAM.
- List of the candidates who have successfully completed the program on the basis of the completion of program and its assessments conducted by program coordinator to be recorded in EXCEL Format only.
- A comprehensive programme reports along with photographs of each session, important videos bytes, is to be send through google drive to NCAM after the completion of programme.
- Utilisation Certificate & Expenditure Statement as per Annexure I & II
- LOGO of the institutions (JPEG/JPG/PNG. format)
- Scanned Signature of the coordinator (black in colour) with white background in all documents along with attested signature of the Head of the Institution.
- Coordinator must submit the following:
  - a. Assessment questionnaire and Results of assessment conducted in EXCEL format
  - b. Completed Checklist by the Coordinator as already listed in Schedule I.
  - c. The details of resource persons and their presentation files and Question paper of exam conducted with answer key.

#### **9. The University/Institution/Program Coordinator shall submit the documents within 15 days after the conduct of the event.**

- Utilisation Certificate (UC), Statement of Expenditure (SoE), bills pertaining to the expenditure and other mandatory documents have to be sent in original to : **Manager - Skilling & Startup Incubation NCAM, Technology Development Centre, Osmania University – 500 007**, within the stipulated time.
- **Queries can be sent to : [p.meenakshi@ncam.in](mailto:p.meenakshi@ncam.in) & [Swetha.Gandra@ncam.in](mailto:Swetha.Gandra@ncam.in)**
- As per NCAM guidelines, the programme should have a minimum of 30 participants (20 for NE, Jammu, Kashmir, Ladakh and Andaman & Nicobar Islands). In the event, if the number of participants registering for the FDP till 1 week before the Program start date is less than the minimum prescribed, the coordinators should wind up the program and return the entire amount of the Fund-in-aid received to NCAM within 07 days.

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- The amount of the Fund shall be adjusted on submission of the utilization certificate & detailed expenditure statement by the University/Institution. On receipt of these documents, the total amount of financial assistance, admissible as per the norms, shall be worked out and the Fund-in-aid shall be adjusted.

## 10. Terms and conditions:

For conducting an FDP, the following are essential

- Coordinator will be overall responsible for successful conduct of NCAM FDP and document submission.
- Each session should be photographed with the resource person and Coordinators should upload the session highlights / session with title slide which will be published on NCAM webpage.
- Funds once released/sanctioned for organising the particular topic/area of FDP cannot be utilized for any other programme. The funds have to be utilized within the current Financial Year
- In case the event is cancelled, the funds will be refunded to NCAM within 07 days.
- FDPs should not be conducted without a minimum number of candidates i.e 30 participants for all states and 20 for NE, Jammu, Kashmir, Ladakh and Andaman & Nicobar Islands. In the event, if the number of registrations received for the FDP 1 week prior to the program date, is less than the minimum prescribed, the coordinators should wind up the program and return the entire amount of Fund-in- aid received to NCAM within 07 days. Coordinators should take adequate measures to ensure participation and successful conduct of the FDP.
- Any unavoidable circumstantial change in the Program with respect to name of FDP Coordinator, Organization and date for organizing NCAM FDP will mandatorily require prior approval of NCAM. All such requests should be addressed to the Manager – Skilling & Startup Incubation at NCAM, in advance, recording the specific reasons for proposed changes, failing which the offer for the Fund already issued would be treated as automatically withdrawn and the financial assistance released in favour of the beneficiary institution shall be refunded immediately to NCAM.
- The resource persons/Topics of the FDP once approved by NCAM, must not be changed at any instance.
- Any extra amount required to complete the programme must be borne by the institute from their own resources, but the quality of the FDP should not be compromised.
- All Participants must upload their Identity Card and NOC (or self-declaration) from their approving authority to attend FDP, to register for FDP through an online registration form.
- In the event of a coordinator being transferred /discontinued from the host institute, replacement should be made, placing a request in writing by the head of the institution for the approval of Competent Authority, NCAM. In cases where replacement is not made in writing, the Fund-in-aid paid will be recouped.

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**FDP Coordinator Checklist**
**Pre FDP**

No.	Item	Date	Checkoff
1	Select FDP topic in alignment with your Area of Expertise and Experience		
2	Develop a Proposal for your FDP topic highlighting Objective, List of sessions, Target audience, Possible dates (1 week), and select a Co-Coordinator		
3	Identify potential Resource Persons with Expertise and Experience from Academia, Industry, and Alumni		
4	Inform your institute leaders about submission of your FDP for their involvement when the FDP gets approved		

**FDP Approval and Prior to Delivery**

No.	Item	Date	Checkoff
1	Confirm identified Resource Persons from Academia, Industry, and Alumni		
2	Collect Resource Person's brief Abstract, Bio, Photo, Bank information		
3	Develop FDP Brochure and Poster including specific session topic assigned to Resource Persons including their photo		
4	Collect presentation file from all Resource Persons one week in advance of FDP start date		
5	Create an FDP joining link using the selected LMP		
6	Submit FDP Brochure and Poster into the NCAM Portal		
7	Screen prospective FDP attendees per NCAM FDP Guidelines		
8	Create a final list of approved attendees		

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### During FDP

No.	Item	Date	Checkoff
1	At each session formally introduce Resource Person		
2	Acknowledge NCAM Academy FDP Expert Peer Reviewer when they join		
3	Monitor sessions for attendance, engagement with productive discussions and feedback		
4	Encourage Q & A through chat box as session is being recorded		
5	At the end of each session provide a 2-3 min Recap of Learnings		
6	At the last session, conduct necessary assessments. specified by ATEP-II FDP Guidelines		
7	Ensure good time management during each session		

### Post FDP

No.	Item	Date	Checkoff
1	Review ATEP-II FDP Scheme document for financial transactions – Honorarium by wire transfer to Resource Persons <b>within five days after completion of FDP</b>		
2	Send out Letter of Appreciation & Certificate to Resource Persons		
3	Complete Assessment of all attendees per FDP Framework concept document		
4	Create an FDP Report highlighting the FDP, Major Learnings, key points from the Reflection Journal, Passing rate, Presentation files, Session Recordings, etc.		
5	Prepare the Utilization certificate, Statement of Expenditure & Receipt of Bills and get it audited.		

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6	Upload your Summary document, Utilization Certificates, Statement of Expenditure, FDP Report, Photos, Attendance & Evaluation sheet of the Participants etc. in ATEP-II Portal within fifteen days of FDP completion		
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**Annexure-I**

**NAME & ADDRESS OF THE INSTITUTE.....**

**UTILIZATION CERTIFICATE against NCAM FDP Fund**

**FOR THE FINANCIAL YEAR.....**

Name of the Scheme under which Fund was sanctioned (to be submitted separately for each sanction order)

NCAM File No. :

Name of Co-ordinator:

Application No. :

Title of the Programme : S.No.	NCAM Sanction Order/Letter No. & Date under which Fund was sanctioned	Amount (Rs.)
1.	Certified that out of the Fund of Rs. (in words) sanctioned by the NCAM during the financial year in favour of (name of the Institute) as per letter mentioned in the margin, Rs. on account of unspent balance of previous year, Rs. on account of other income / receipts, a sum of Rs. has been utilized for the purpose for which it was sanctioned and the balance of Rs. Remained unutilized at the end of the year.	

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**Kinds of checks exercised: -**

Audited Annual Accounts of the Institute, Receipt and Payment account, Periodical Progress Reports.

(1). Signature, Name & Address of the Coordinator

with seal :Date:

(2) Signature Name and Address of : of the Head of Institute with

seal : Full Address :

Date :

3). Signature of Chartered Accountant

Rubber stamp

Date :

(4). Signature of the Finance Officer/ Accounts Officer:

Name of the Finance Officer/Accounts Officer:

(If it is Govt./Govt. Aided Institute)

Note:-If it is more than one page, each page must be signed in all annexures

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**NCAM AM PROGRAMME  
 FORMAT FOR STATEMENT OF EXPENDITURE**

NCAM File No. (Sanction Letter No.):

Title of the Programme :

Application No.:

Name of the Coordinator:

Sanction No. and Date	Fund Sanctioned	Details of Expenditure Incurred Item wise	Amount Rs. (in each head)	Number of Participants	Duration of the Programme (with dates)
		1 Honorarium to Coordinator			
		2 Honorarium to Co-Coordinator			
		3 Honorarium for Computer Operators / Lab Technicians			
		4 Honorarium to Trainers			
		5 TA to External Experts engaging sessions			
		6 Refreshment +Lunch			
		7 Hands on training material, Consumable items and Miscellaneous charges etc. (reimbursed on actual basis)			
		8 Industrial visit (Travel expenses & visit charges, if any)			
		<b>Total</b>			
		Fund Received			
		<b>Balance to be Received</b>			

