

Inputs received from several eminent Persons/Institutes/Organizations since Sept 2020 have been incorporated in the FAP

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लचीला शैक्षणिक पाठ्यक्रम

- ✓ Multi Exit
- ✓ Multi Entry
- ✓ Multidisciplinary
- ✓ Multi-Mode
- ✓ Multi-Institute
- ✓ Lateral entry
- ✓ Flexible Fee
- ✓ Holistic Approach
- ✓ Multiple Language Medium



Flexible Academic Program

A Step Towards NEP 2020

“A butterfly flaps its wings in the Amazonian jungle,
and subsequently a storm ravages half of Europe”

- The Chaos theory's famous saying

“यह नीति उच्चतर शिक्षा प्रणाली में आमूलचूल
बदलाव और नए जोश के संचार के लिए उपयुक्त
चुनौतियों को दूर करने के लिए कहती है”

- राष्ट्रीय शिक्षा नीति २०२० अनुभाग ९.३



FAP की प्रष्ठभूमि

- २९ जुलाई २०२० को राष्ट्रीय शिक्षा नीति २०२० जारी हुई। इसके उचित क्रियान्वयन हेतु तुरंत ही शिक्षा संस्कृति उत्थान न्यास, नईदिल्ली ने विचारमंथन के प्रयास शुरू किये:
 - ५ सितम्बर २०२० को ट्रिपलआईटी, फिर **देश को बदलना है तो शिक्षा को बदलो**
 - १७ सितम्बर २०२० को एनआईटी, और फिर
 - २० सितम्बर २०२० को आईआईटी के निदेशकों और शिक्षको के लिए आयोजित वेबिनार में 'लचीला शैक्षणिक पाठ्यक्रम' का प्रारूप प्रस्तुत किया गया था।
- तदन्तर देश के विभिन्न हिस्सों में अनेक संगोष्ठियों का आयोजन हुआ; ट्रिपलआईटीए प्रयागराज, एनआईटी पटना, ट्रिपलआईटी पुणे जैसे राष्ट्रीय महत्त्व के संस्थानों की सीनेट (Senate) में चर्चा हुई; आईट्रिपलई (IEEE), एआईयु (AIU), शिक्षा मंत्रालय, नीति आयोग, AICTE जैसे संस्थाओं से जुड़े विशिष्ट व्यक्तियों एवं अन्य अनेक विशेषज्ञों से मिले सुझावों को समायोजित करते हुए 'लचीला शैक्षणिक पाठ्यक्रम' (FAP) का एक प्रारूप तैयार हुआ।
- ३ और ४ दिसम्बर २०२१ को ट्रिपलआईटीए प्रयागराज में FAP पर प्रथम राष्ट्रीय सम्मेलन का आयोजन हुआ, जिसमें FAP के विभिन्न आयामों पर विस्तृत चर्चा हुई | कई आईआईटी/एनआईटी/ट्रिपलआईटी के निदेशकों (या उनके द्वारा नामित उनके संस्थान के वरिष्ठ शिक्षको), कुछ राज्य तकनीकी विश्वविद्यालय के कुलपति, एआईयु (AIU), शिक्षा मंत्रालय, नीति आयोग, AICTE जैसे संस्थाओं से जुड़े विशिष्ट व्यक्तियों, के साथ ही अन्य अनेक गणमान्य विशेषज्ञों ने उत्साहपूर्वक सहभागिता करते हुवे सार्थक चर्चा की।

Innovations in FAP

- 1) PhD is the Target degree, but Midway Exit oriented curriculum is designed. Reentry Mechanism has been highly simplified through local ABC.
- 2) Centralized Multi-Institute movement is encouraged after each year.
- 3) Completion of Credit requirements is needed at each exit point, number of years used in it is irrelevant. Higher side exit points has research Credit requirements too.
- 4) The financial model is completely different. Instead of semester, the fee will be charged for each registered course. Same course may be offered by different teachers with different fees. A teacher may offer courses for free too.
- 5) Sports/Extra Curricular activities/Community Services/ NCC/NSS/Other discipline subjects study etc. are integrated in the curriculum.



प्रथम राष्ट्रीय सम्मेलन की अनुशंसाओं का सारांश

- **शैक्षणिक वर्ष २०२२-२३** से FAP के प्रायोगिक क्रियान्वयन (Pilot Run) हेतु प्रथम राष्ट्रीय सम्मेलन में संघ (Consortium) बनाने के निम्नलिखित तीन आकर्षक तरीके उभरकर आये हैं, जिन्हें एक साथ भी लागू किया जा सकता है :
 - राष्ट्रीय स्तर पर कुछ चुनिन्दा संस्थान संगठित हो, उनमें से कोई एक समन्वयक बने (TYPE-1)
 - क्षेत्रीय स्तर पर तकनीकी विश्वविद्यालय अपने कुछ चुनिन्दा महाविद्यालयों में FAP लागू करे, साथ ही समन्वय भी करे। अपने क्षेत्र के राष्ट्रीय महत्व के संस्थानों और/या उनके शिक्षकों को भी साथ ही जोड़ने का प्रयत्न करे। (TYPE-2)
 - आईआईटी को शिक्षा मंत्रालय ने आसपास के संस्थानों को मार्गदर्शन (mentoring) करने का जो आदेश दिया है उसी को आगे बढ़ाते हुए एक संगठन बनाया जाए, और सम्बंधित आईआईटी समन्वयन करे। (TYPE-3)
- इन सभी संभावित क्रियान्वयन तरीकों की सहायता हेतु शिक्षा मंत्रालय (भारत सरकार) एक नोडल एजेंसी का गठन करे। जिसके द्वारा सूचना प्रौद्योगिकी मंच (Information Technology Platform) फेपीस (FAPIS: Flexible Academic Program Integrated Services) को जल्दी की चालू (activate) करने की दिशा में प्रयास किये जाए।
- छात्रों से भी सुझाव आमंत्रित किये जाए, और उनका समुचित समायोजन हो।

In the pilot run following programs (with 8 Exit Points) may be opened in the respective Consortium

1) Flexible Academic Program (FAP) in IT
Requires limited lab facility

2) Flexible Academic Program (FAP) in ECE
Requires moderate lab facility

FAPIS will be available via
<https://fapis.in>



Types of FAP Consortia

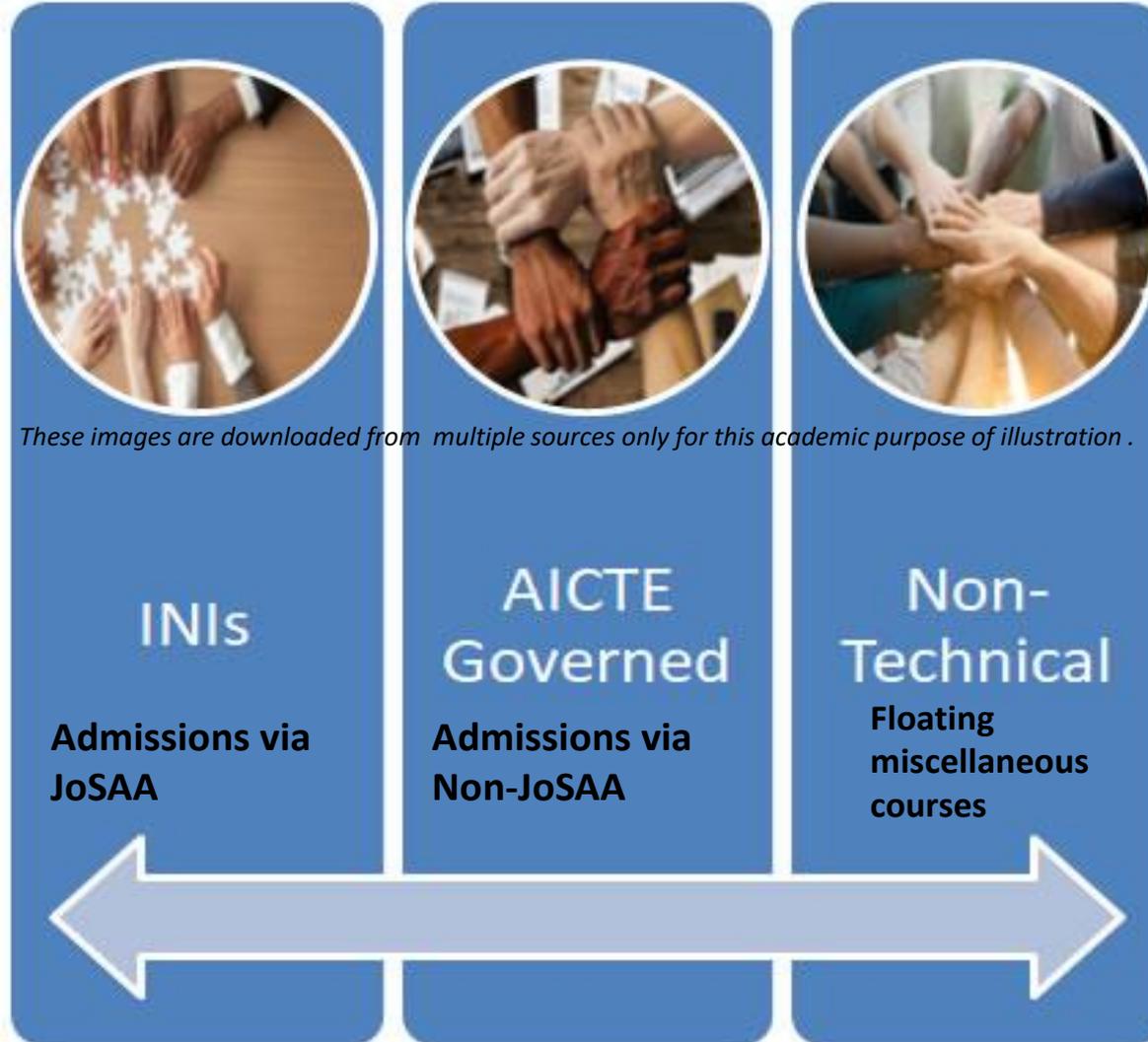
Type-1:

Institutes of National Importance (INIs)

- (A) IITs: Admission via JEE Advance
- (B) NITs/IITs: Admission via JEE Mains

Type-2:

Colleges of a state (and Pvt. Universities) headed by respective State Technical University (INIs of the respective state may extend support)



Many independent FAP consortiums under various pilot runs headed by different institutes/Technical Universities/IITs coordinated by a nodal Agency, as defined earlier.

Within a Type multiple independent consortiums may also be possible e.g. the older IITs may have a different consortium and newer IITs may have another independent consortium.

Intra and inter-consortium movement may be allowed through a transparent and fair mechanism, as may be defined by the nodal agency.

Renowned HESS (Non-Technical) Institutes/Universities may also be PIs enabling their teachers to float courses for FAP students under HESS baskets.

Moreover, these institutes may plan their own FAP programs through their own consortium (**Type-4**, as **Type-3** should be of those where an IIT is heading its mentored colleges), which may also be coordinated by the same nodal agency, so that, some time in future Technical FAP to other discipline FAP movement may also be coordinated by the nodal agency.

These images are downloaded from multiple sources only for this academic purpose of illustration.

Multi-Entry/Multi-Exit/Lateral Entry Credit Scheme of FAP

PhD in ECE/IT (260 Credits + 12 Research Credits)

Master of Technology with Research Certificate in ECE/IT (250 Credits + 5 Research Credits)

Master of Technology Degree in ECE/IT (225 Credits + 2 Research Credits)

PG Diplomain ECE/IT (192 Credits)

Bachelor of Technology Degree in ECE/IT (160 Credits)

Advance Diploma in ECE/IT(120 Credits)

Diploma in ECE/IT (80 Credits)

Certification in ECE/IT (40 Credits)

Minimum credit requirements of CORE subjects may be defined

Academic Bank of Credits (ABC) will be maintained at FAPIS

Exit Points

Earning required credits are primary requirement at each exit point. The year/sem is notional i.e. more or less time may be permissible to slow/fast learner.

1stSem 2ndSem 3rdSem 4thSem 5thSem 6thSem 7thSem 8thSem 9th Sem 10th Sem 11th Sem 12th Sem 7th Year 8th Year

हर विषय की पढ़ाई अलग अलग शुल्क के साथ ऑनलाइन या कैंपस में हो सकती है

शिक्षक की उपलब्धता के अनुसार किसी भी भाषा में हर विषय की पढ़ाई हो सकती है

Mentioned years are just indicative. As long as prerequisite conditions are satisfied. The students may opt more OR less credits

Year	Theory and Tutorial Credits	Practice Credits	Non-Technical Credits	Total Credits
1 st Yr.	20	14	6	40
2 nd Yr.	43	25	12	80
3 rd Yr.	65	35	20	120
4 th Yr.	77	51	32	160
5 th Yr.	95	60	37	192
6 th Yr.	102	80	43	225 + 2RC#
7 th Yr.	108	99	43	250 + 5RC#
8 th Yr.	108	109	43	260 + 12RC#

1 Theory credit = 1 Hour and 1 Tutorial or Practice Credit = 2 Hours of engagement per week during the semester period as may be announced by VI.

Research Credits (RC) can be earned by conferences/journals publication patent/copyright filing/earning, Academia/Consultancy externally/self-funded Project, etc.

Entry (Minimum Qualification: Intermediate)

Lateral Entry** (Minimum Qualification: Certification or Equivalent in ECE/IT)

FAP's MultiEntry/MultiExit/ Lateral Entry opportunities

Lateral Entry** (Minimum Qualification: Diploma or Equivalent in ECE/IT)

Lateral Entry** (Minimum Qualification: Advance Diploma or Equivalent in ECE/IT)

Lateral Entry** (Minimum Qualification: B. Tech or Equivalent in ECE/IT)

Lateral Entry** (Minimum Qualification: PG Diploma or Equivalent in ECE/IT)

No Lateral Entry

No Lateral Entry

**At the Lateral Entry Stage, additional credits may be assigned to the students. He may be asked to complete these credits before starting the regular coursework, or may be allowed to complete along with some other courses.

Main Features of the FAP Curriculum

- All technical courses have been reorganized and their syllabus has been redefined to ensure that there should be completeness (in some sense) at each exit point.
- In each semester 2 credits are required to be completed from miscellaneous basket and another 1 credit by sports or community service. For NCC/NSS type courses these credits may be combined into 3 credit courses. The model tested in the 'Orientation Camp' for systematically organizing the community services through the pre recognized organizations may be adopted.
- Instead of individual elective subjects complete modules of specialized streams are proposed to be offered in 6th and 7th sem. The graduating student will have skills of 2 such specialized modules. If a student wants to continue study in one of these two streams then he should move ahead through MTech by research mode. However, if someone wants to change the stream at this stage then he/she needs to adopt the standard curriculum.
- In 7th and 8th Year instead of semester system, yearly system will be followed. Further no lateral entry is allowed at this stage.
- **Depending upon speed of earning credits, the duration gets shortened or increased.** At any point of lateral entry, depending upon the previous credits earned, and the time gap, a few more credits may be asked to be completed for earning the next level certificate.

Primary responsibilities of the PIs

Motivating its faculty members to offer courses for students enrolled under FAP. ONLINE, ON Campus modes, Offered Language in which they will teach the course, per student fee (from 0 to some upper limit as may be fixed by the nodal agency), the minimum and maximum number of students for which they will run the course, etc. *The honorarium and institute's overhead will be in proportion to the number of students taught by them*

Notifying maximum number of students who may be accommodated in their campus. *(the hostel, mess etc. charges may be collected extra from the students reported to their campus)*. Notifying about the vacancy created at their institute at any level (of the relevant programs offered), for whatsoever reason, allowing the Nodal agency to fill it through FAP Top-UP scheme.

Admit the students carrying the VISA issued by the nodal agency and release them after the semester is over. Ensuring that the results should be submitted before the deadlines defined by the nodal agency.

Allowing the nodal agency to use its name/logo in advertisements, marksheets/transcripts etc. purposes.

Designate a faculty as FAP Coordinator, who is the part of nodal agency and may be the point of communication for the respective institute.

Any other responsibility as may be assigned by the nodal agency.



Targeted skills at each exit point of the FAP

Exit Point	FAP in ECE	FAP in IT
40 (20+14+6)	Relevant theory with small electrical/electronic/ digital circuits fabrication on PCB. Basic PC/Web tools and programming. Professional Letter writing.	Knowledge in Computer Basics including unix commands, softwares and hardwares, basic programming skills, realize the networking aspects of computers and can manage the IT infrastructure of any organization. small-scale innovative IT-Enabled electronic products, IoTs and small-embedded products. good communication skills
80 (43+25+12)	Relevant theory with circuit design and fabrication for wider applications. PC/Mobile assembling and troubleshooting.	Strong foundations in Information Technology in terms of object oriented programming, complexity analysis, operating system, computer and communication networks. manage the databases for the organizations. front-end and back-end solutions by integrating with databases. Start any digital marketing industry.
120*	Relevant Theory with SMT fabrication. RF and communication based systems design and testing. Managerial skills.	Good hands-on experience with full stack development and will be able to develop the full fledged projects of webservices. solutions for real-world problems using AI and ML tools for different data, including Images.
160*	Two specialized domain training with relevant in depth theory, planning and building big implementation projects. Entrepreneurship, Banking, etc.	Develop efficient IT solutions for real-world applications. The certification course in 4th year can be in a specialization such as (AI&ML, Cybersecurity, Data Science, etc.) based on the elective courses that specialization
192*	Research Methodology, up to date research and development status of a narrower specialization, Research paper writing skills.	
225*+2#	Research problem formulation skills in the chosen narrower specialized field and relevant software/hardware tools used in the research, research projects writing	
250*+5#	Critical Research, Reviewing the peer's research works, Sharpened experimental and Analytical skills in the chosen field of research.	
260*+12#	Reputed Journal Paper Publications, Patent Filing, Thesis Writing, Consultancy projects.	

#RC

As long as prerequisite conditions are satisfied, the students may opt more OR less credits in a given semester to

*** Details given in table choose early or later completion of the chosen exit points credit requirements.**



Steps for Implementation of the NEP 2020 via FAP

1) Start 'Restricted FAP in IT' and 'Restricted FAP in ECE' programs w.e.f. year 2022-23

Like any other UG program of the institute, entry in the FAP will be done through JoSAA, and at the chosen exit point the degree/certificate is required to be awarded by the institute.

All flexibilities of FAP along with some RESTRICTED multi-institute flexibility (e.g. only maximum of **MM** Credits (including ONLINE courses) may be allowed. Visit to selected institutes (as may be decided by the Chairman Senate) with a short visit for maximum of **NN** semesters in the first 4 years, etc.) may be allowed. Admission retention fee during visit to other institutes (**RR**) may be defined. Nodal agency may facilitate the movements.

To begin with **yy%** intake of B.Tech. programs, currently running at the institute, may be utilized for starting these two FAPs with effect from the academic year 2022-23, such that the overall intake in the institute will remain same. *(This yy% may be suitably upper bounded keeping in view the total number of M.Tech. seats expected to be offered after 4 years from now by the institute, and expected number of available PhD seats 6 years down the line.)*

MM, NN, RR, YY may be defined as the institute deem fit.

2) Build/Join a suitable type FAP consortium, and Participate in the Pilot Run of 'FAP in IT' and 'FAP in ECE' programs under 'Full FAP'

A Suitable consortium type may be build/joined. Further, the MOE is expected to establish a nodal agency for conducting the pilot run of 'Full FAP'. IITA Prayagraj has submitted this request along with the recommendations of the panel discussions of the above said 1st National conference on FAP. The institute may join the said pilot run whenever such a nodal agency starts functioning.

To this end, the Chairman Senate may be authorized to divert some seats of the 'restricted FAP', as stated in step (1) above, for admission and annual multi-institute movement of the admitted students by the nodal agency as per the provisions of 'Full FAP'

3) Allow 'Top-UP FAP' on FAP as well as all currently running program

Just like JoSAA, lateral entry against vacancies in 2nd/3rd/4th year of FAP as well as in all other existing UG programs may be coordinated through a centralized body (e.g. the nodal agency). It should develop a transparent and fair formula for the purpose. Degree/certificate should be awarded by the institute from where the student is completing the program. However, the credits earned from previous institute(s) may also be explicitly mentioned in the final transcript.



The Nodal Agency (a MERU) proposed to be established by MOE

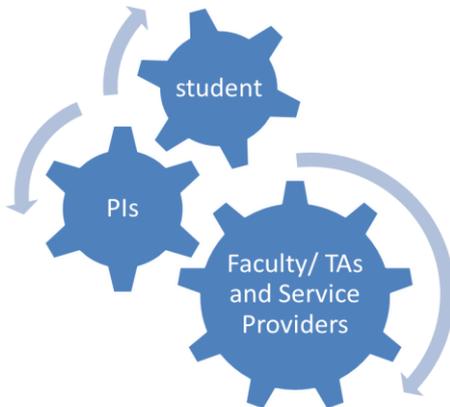
Proposed Financial Model

Income Sources

- Grants from Govt./Autonomous Bodies.
- Donations from industries/philanthropists.
- Course Fee collected from the enrolled students.

Expenditures

- Development, Operation and Maintenance costs of the backbone software.
- Honorarium to Teachers, TA's, Office bearers of nodal agency, etc. persons.
- Service charges to Coordinating Institute(s)
- Overheads to the institutes whose teachers are offering courses in FAP
- Advertisement, and other miscellaneous costs.

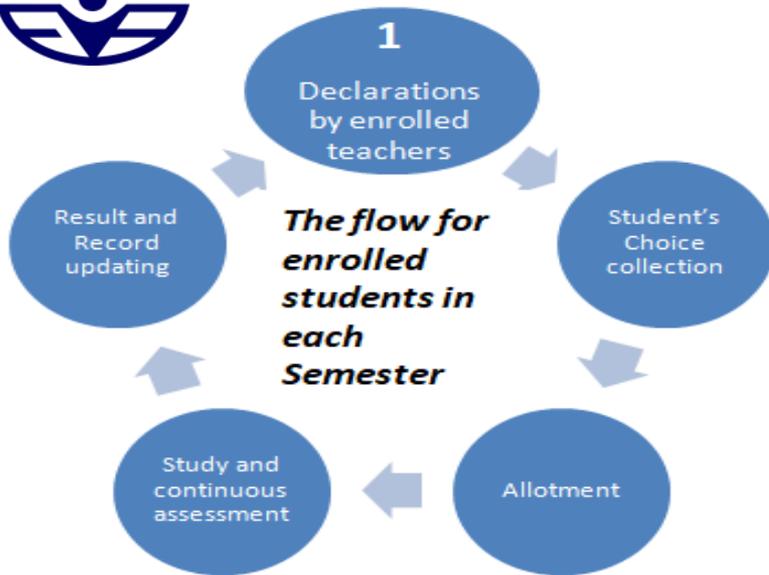


Constitution and Responsibilities

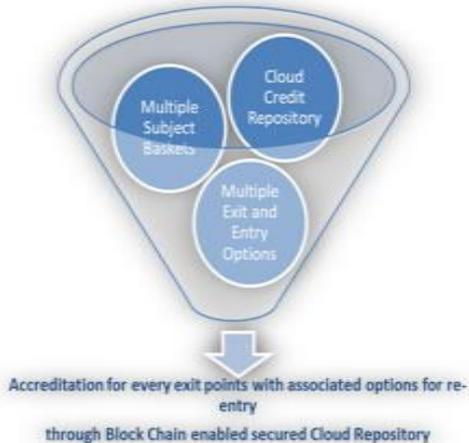
- The MOE should establish a **Multidisciplinary Education Research University (MERU)** for acting as a nodal agency during pilot run bridging among various institutes/universities which offers FAP. Also it should conduct 'full FAP' and similar innovative programs after getting the power of conferring degrees through the Act of Parliament. **For time being, the MOE may designate any Institute of National Importance as the Nodal Agency.**
- The nodal agency should provide backbone support (FAPIS) needed for various pilot runs e.g. issuing VISA's for visiting PIs, Credit Conversions and Banking, etc. tasks.
- The nodal agency will have its own BOG, Senate and other bodies consisting of a few Professors/Officers working at PIs (as nominated by respective Director/VC), Nominees of MOE Govt. of India, AICTE, UGC, NIC, etc. These bodies will function as they works in institutes of national importance (INIs).
- The nodal agency should work in distributed manner i.e. it may designate one of the PI as a coordinating institute for a particular batch of a particular specialization transferring almost all its responsibilities for that batch.



FAP's Backbone: FAP Integrated Service Platform (FAPIS)



Record Keeping Routine



Academic Bank of Credits (ABC) will be maintained at FAPIS

The Enrolled faculty of any PI or any other person chosen by the consortium will choose the available time slot for the offered course. Post the syllabus and the lecture plan.

Define Maximum number of students in ONLINE/On Campus Modes and the fee of the offered course.

Teacher's Routine

The students will opt by paying the course fee. The 'On Campus mode' students will have to pay the additional fee of stay, food, etc.

The consortium may provide them accommodation either in the respective institutes hostel through proper channel or outside (it will be pre declared)

Conduct the classes, do continuous assessment as per CCLCAA, submit C1 C2, C3 scores and conduct C3 Make up exam if needed.

The Consortium will pay the honorarium to the faculty and its parent institute, as per the signed MoU.

Updated Status

1) IITA Prayagraj has submitted a draft for Act and Statutes of the proposed nodal agency (MERU) to MOE, along with other relevant details for conducting pilot run.

2) Type-1 (b) consortium building has been started. IITA Prayagraj has taken the lead for the same.

3) Gujarat Technical University (GTU) Ahmadabad, and Abdul Kalam Technical University (AKTU) Lucknow are actively considering establishing independent TYPE-2 FAP Consortiums.

4) The development of backbone IT support system fapis.in has been started. The needful elementary services are expected to become operational within next 2-3 months.

5) Request has been sent to all IITs for building Type-1 (a) consortium.

Response to FAQs

- 1) Any teacher (including recently retired teachers) of INIs or the participating institutes may register as main or supporting teacher in one or more subjects.
- 2) The main teacher needs to deliver Lectures and prepare question papers for Quiz, whereas supporting teacher needs to conduct tutorials/labs, and do continuous assessment, evaluation of quiz, and result compilation of respective batch under overall supervision of the main teacher.
- 3) Same subject in the same consortium may be offered by multiple teachers with different fee, the student may choose anyone. Different consortiums may define different proportions of collected fee to the main teacher, supporting teachers and their affiliating institutes.
- 4) Norms of counting Research Credits may be different in different consortiums.
- 5) All lectures will be delivered in smart classes having ONLINE streaming facility. Those who have opted it from other institute should attend the class in ONLINE mode, and those students who are at the same institute should attend his/her class in physical mode.
- 6) The main teacher may engage PhD research scholars working at various institutes/colleges too as supporting teacher for his/her subjects.
- 7) The specialized 16 credits modules offered under various FAPs specializations may have lateral entry of UG/PG/PhD degree holders (of any stream) too. Upon completion the respective specialization certification will be given to them. The respective module head will however define maximum number of students who can opt it.
- 8) A specialization module may have multiple main teachers. Workshops with hands-on sessions should be a part of each such module. Some of the 16 credits may be assigned for Minor project too.
- 9) Different consortiums may have different norms for intra-consortium movements, different PIs may impose additional riders thereon. But, inter consortium movement norms will be defined by the nodal agency, which may remain binding.
- 10) Each enrolled student has to pay fixed processing fee for availing FAPIS platform services in each semester irrespective of number of courses chosen by him/her. Also, one time fee (for life time maintenance of ABC) is required to be paid at the time of admission, which may be defined from time to time.