Flexible Academic Program

A Step Towards NEP 2020

Multi Exit | Multi Entry | Multi-Disciplinary
Multi-Mode | Multi-Institute | Flexible Fee
Holistic Approach | Multi-Language Medium
Continuous Assessment

A Framework Inspired by NEP 2020

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY ALLAHABAD, PRAYAGRAJ

(An Institute of national importance governed by the act of Parliament, IIIT Act 2014)

आज़ादी का अमृत महोत्सव

Website
http://fap.iiita.ac.in

Flexible Academic Program

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A Step Towards NEP 2020

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY ALLAHABAD (IIITA), Prayagraj is a centrally funded technical institute of national importance, which is governed by the act of Parliament, IIIT Act-2014. Taking a giant step towards the implementation of National Education Policy (NEP 2020), the institute has prepared the Flexible Academic Program(FAP) framework. It is offering 25 seats in Bachelor of Technology in Information Technology and 25 seats in Bachelor of Technology in Electronics and Communication Engineering . Following are the main highlights of the FAP framework :

Multiple Exit Points (with a flexibility to reenter at later stage and pursue next degree program)

The curriculum is prepared by the specialists in such a way that opting any one of the following exit, the student will be able to do something in the society. Opting any exit, any student will be able to continue next higher educational program in either regular (on campus) or in working professions (with job) mode.

(a) Exit after Advanced Diploma in ECE/IT requirements of 120 Credits in the desired proportion.
(b) Exit after B.Tech. Degree requirement of 160 Credits in the desired proportion
(c) Exit after completion of M.Tech. Degree requirement of 225 Credits + 2 Research Credits#
(d) Exit after Completion of PhD Degree requirement of 260 Credits + 12 Research Credits

Option of choosing the Flexible Semester Credits

In the 7th Semester fewer credits has been recommended so that student may have more time for placement related activities .In each semester, choosing of maximum 24 Credits facility has given to the students, so that they may offload the regular semester credits. All earned credits will be maintained in Academic Bank of Credits(ABC). The credits earned by the student may be redeemed /transferred to any other Institute at the time of his/her exit.

Flexible Fee Structure

Under FAP framework each course will be offered with a specific tuition fee in each semester. At the time of course registration all relevant details will be visible to the students on portal/brochure in force. Depending upon the choices made by a student at the registration time, actual tuition fee as applicable for the opted courses will be accounted and adjusted later on.

**1 Credit can be earned after completing 1 hour of Lecture, or 2 hours of Tutorial or 2 hours of Practical courses in a semester time.*
#Research Credits can be earned by performing various research activities, such as publishing papers in conference/journals, patents, start-ups conducting sessions in workshop etc. as may be defined time to time.

Specialized 8 Credits Basic(Bridging) and 12+4 Credits Advanced(specialization) modules

The Basic(bridging) and Advanced(specialization) modules in the field of IT/ECE are specifically designed in the FAP, so that the students can gain significant exposure of M. Tech (ECE) and M. Tech (IT) specializations running at IIITA. Few more Basic/Advanced modules developed by other prestigious institutes may also be offered along with the pre-declared courses. The student may choose any one of these Basic/Advanced modules.

12-Credits Humanities and Social Science (HSS) specialized Module and opportunity of learning Indian/Foreign Language, Community services, etc.

The courses of the HSS modules will be covered during 1st, 2nd, 5th and 6th semesters in a sequential manner. Independent standalone courses or clubbed courses from multidisciplinary baskets (as approved by IIITA) may be allowed in ONLINE/On-Campus/Hybrid mode in the subsequent semesters as mentioned above.

Opportunity to learn from faculty members of other eminent Institutes

To make an opportunity for the students to learn the Basic and Advanced module, HSS module and multidisciplinary courses from other eminent Institutes and their faculty members.

Proposed FAP Consortiums and MERU

Various homogeneous consortiums (like IIT, NIT, IIIT, State Technical University) are proposed to be build . Further for seamless coordination among other consortiums as Multidisciplinary Education Research University(MERU) are also proposed to be constituted by Ministry of Education, Government of India.

For more details please visit website
http://fap.iiita.ac.in
Under FAQ tab at above weblink interactive Query Response System is available.

Indian Institute of Information Technology Allahabad, Prayagraj

(An institute of national importance governed by the act of parliament, IIIT act 2014)

- ✓Multi Exit
- ✓Multi Entry
- ✓Multidisciplinary
- ✓Multi-Mode
- ✓Multi-Institute
- ✓Flexible Fee
- ✓Holistic Approach
- ✓Multi-Language Medium
- ✓Continuous Assessment

Flexible Academic Program

A Step Towards NEP 2020

Website : http://fap.iiita.ac.in

FAP Integrated Services Available at https://fapis.in

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धर्मेन्द्र प्रधान
ଧର୍ମେନ୍ଦ୍ର ପ୍ରଧାନ
Dharmendra Pradhan

मंत्री
शिक्षा; कौशल विकास
और उद्यमशीलता
भारत सरकार
Minister
Education; Skill Development
& Entrepreneurship
Government of India

MESSAGE

It gives me immense pleasure that **Indian Institute of Information Technology Allahabad (IIITA)**, Prayagraj (Uttar Pradesh) has built an innovative 'Flexible Academic Program (FAP)' framework which is precisely focussing on the larger objectives of NEP 2020.

The progress of the nation depends on the efficacy of our ability to innvoate, create, develop efficient design techniques, industry-institute interaction and efficient solutions for good governance. India has the most cost effective higher education system in the world. India is well on its way to become a knowledge power hub leading to overall growth in all the spheres of existence. We are fortunate to have an opportunity to take forward the leadership in the knowledge revolution and help India evolve into a developed nation through technical education. The initiatives such as *Digital India, Make in India, Start-up India, Smart Cities, Swachh Bharat Abhiyan and Unnat Bharat Abhiyan* are examples of such successes. Our graduands can emulate these in mobilising and integrating enormous knowledge resources.

The government of India rolled out the National Education Policy 2020 with great ambition of uplifting the overall education standards in the direction of making a self-reliant nation and high character citizens. Ensuring life long quality education for all citizens through coordinated efforts of various levels of institutes in optimal utilisation or resources has been a crucial objective of NEP 2020. The framework which has been prepared by IIITA Prayagraj in line with the goals of NEP will definitely provide many flexibilities to the students.

I appreciate the efforts of IIITA Prayagraj and wish all the success to the FAP framework.

(Dharmendra Pradhan)

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Foreword by the Patron

Prof. Anil D. Sahasrabudhe

Chairman, AICTE, New Delhi

I am very happy to know that IIITA Prayagraj is going to admit 50 students under Flexible Academic Program framework w.e.f. academic year 2022-23 via JOSAA/CSAB 2022. It is heartening to note that IIITA Prayagraj is going to release a reference book on this auspicious occasion.

NEP 2020 focusses on student centric flexible education system enabling students to move within and across education, training and employment. By adopting FAP, young learners/students can adapt their learning pathway as they go along, to suit their interests and abilities.

Flexibility in choosing multiple exit points would further allow students to respond and adjust as they move toward their goal. Students encounter the challenges in their new role and new environment and may need to change and adapt to meet these new challenges. Flexibility allows students to get to know themselves better and schedule their learning schedule accordingly. This means their focus is high and their capability of retaining information is significant when they start learning.

Along with the above, Flexible learning allows the students to decipher when and how they will learn by tailoring their course to their own capabilities. This ultimately would lead to retaining information and producing better results. They would also have the advantage of learning at their own pace which can help to alleviate a lot of pressure.

The flexible learning also help moulding the learner to plan their activities according to their interest and enthusiasm. It also keeps the mind of learner pleasant and upbeat and without any external fear. It has also been proved that flexible learning in classroom helps to promote quality education. I give my heartiest congratulations to the office bearers of IIITA Prayagraj for initiating such a noble cause of admission of 50 students under this FAP framework w.e.f. academic year 2022-23 via JOSAA/CSAB-2022.

Foreword by the Patron

Persistent

Dr. Anand Deshpande

Chairman, Board of Governors IIIT Allahabad, Prayagraj
Founder, Chairman and Managing Director of Persistent Systems

I would like to congratulate the IIIT-A Faculty members and Members of the Senate for launching the visionary Flexible Academic Program. The program allows students the flexibility to personalize their curriculum by choosing courses that meet their requirements and ambitions. This is possible through the unique collaboration among multiple institutions of national importance. The program helps institutions define areas to focus and build expertise as they can leverage the expertise of other institutions while providing the students an opportunity for holistic education.

This program is completely aligned with the National Education Policy 2020, and I am confident that all premier institutes will adopt the program wholeheartedly.

Putting together a multi-institution program is difficult and I commend the faculty, the senate and the committees that worked tirelessly to put this program together.

I encourage students and other institutions to participate and benefit by joining this unique program.

With best wishes for the success of the Flexible Academic Program.

Foreword by the Patron

Padmashree Prof. Manindra Agrawal

IIT Kanpur

I am well aware of this initiative taken by IIIT Allahabad for the past year or so, I know that under the leadership of Prof. Neetesh Purohit, the institute has been working on developing the FAP concept and that it has evolved significantly to a level that admissions are now offered for the academic year 2022-23.

At its heart lies the wonderful idea that a student should have the flexibility to acquire knowledge from multiple institutions and that there should be a clearly defined process enabling the students to achieve it. The FAP initiative is that enabler. It has several interesting ideas like multiple exits, reentry, specialized minor and major modules on the latest technologies, HSS modules, the scope of multidisciplinary education in hybrid mode with flexible fee structure, etc.

IIITA's initiative of developing a FAP integrated service (FAPIS) platform for extending various services like the academic bank of credits (ABC), digital certifications, etc, and the willingness to make these services to other institutes which may offer FAP in the future is particularly appreciated. It underlines the seriousness of the institute in effectively implementing NEP2020 through FAP

I am very excited and look forward to seeing the FAP getting implemented and the students benefit from this as soon as possible. I will be happy to be involved with this initiative and help it get implemented.

Foreword by the Patron

Prof. P. K. Mishra

Vice Chancellor, AKTU Lucknow

The Flexible Academic Program (FAP) framework is indeed a highly innovative and effective way of implementing NEP2020. IIITA Prayagraj must be appreciated for putting great efforts in drafting the fine details and curriculum for FAP, and for becoming the first institute which is offering admissions under the FAP framework.

At AKTU Lucknow, the discussions at proper platforms have been started. A 5 member committee under chairmanship of Pro VC AKTU Prof Manish Gaur keeping the national coordinator FAP Prof Neetesh Purohit as coordinator has been constituted with the mandate of preparing a customized proposal for FAP implementation at AKTU w.e.f. academic year 2022-23. I am hopeful of starting admissions in a few colleges of AKTU soon as a pilot run.

I wish all the best to IIITA for publishing this reference book on FAP. I am sure that it will be useful to students, teachers as well as other institutes in understanding FAP framework.

Foreword by the Director CFIIIT

Prof. R. S. Verma

Director, IIIT Allahabad, Prayagraj (Additional Charge)
Director, MNNIT Prayagraj

With great pleasure, I announce that Indian Institute of Information Technology-Allahabad (IIIT A), Prayagraj will admit 50 students through JOSAA-2022 under the Flexible Academic Program (FAP) framework. The Institute is also publishing a reference book for aspiring candidates and academicians to help them understand the modalities of the FAP framework.

I have recently received the additional charge of the Director IIIT-A, Prayagraj. I have experienced the great enthusiasm of the faculty members of the Institute for making the FAP a grand success. The New Education Policy-2020 (NEP-2020) states that

> "The vision of the Policy is to instill among the learners a deep-rooted pride in being Indian, not only in thought, but also in spirit, intellect, and deeds, as well as to develop knowledge, skills, values, and dispositions that support responsible commitment to human rights, sustainable development and living, and global well-being, thereby reflecting a truly global citizen."

I think that the FAP framework proposed by IIIT-A possesses the potential to bring positive changes in the higher technical education which will comply with the proposed vision of NEP 2020.

I wish IIIT-A, Prayagraj all the best for the success of the FAP framework.

Foreword by the Director CFIIIT

Prof. S. N. Singh

Former President IEEE Indian Council
Director, IIITM Gwalior

India, which has been spreading the light of its knowledge and spirituality across the globe for centuries has been called the world GURU. All the civilizations were seen walking on the path shown by us of education the early period, education was mainly given by Brahmin families in India. During the time of Mughals, the education system was under elitist ideology. The British rule promoted a modem state, economy and modern education system.

After independence of India in 1947, the higher educational and technical institutions like IIMs and IITs in the country for better education were envisaged. Many NITs and IIITs were also established for technical and IT education in the country. There were many reforms and policies were implemented but there was utter need to relook our education system in the current environment and technological advancements. Education being in the concurrent list, both state and central government are responsible for improving the education in the country.

The first education policy came in 1968. It was based on the recommendations of the Kothari Commission (1964-1966). In this, education was declared a subject of national importance Aimed at better training and qualification of teachers with compulsory education for children up to the age of 14 years. The teaching of Sanskrit language was encouraged as an essential part of culture and heritage. A target of 6 percent of the budget has been set for expenditure on education. Three language formula was implemented at the secondary level.

The objective of National education policy 1986 was to lay special emphasis on equality of educational opportunity, especially for Indian women, scheduled tribes and scheduled caste communities. Expansion of open university system was started with Indira Gandhi National Open University. A call was given to build a rural university model based on the philosophy of Mahatma Gandhi. Its objective was to promote economic and social development at the grassroots level in

the rural India.

One of the main objectives of the amendment, which was done in 1992, in the National policy on education 1986, was to organize a common entrance examination at the national level for admission to professional and technical programs in the country. National level Joint Entrance Examination (JEE) and All India Engineering Entrance Examination (AIEEE) and State Level Engineering Entrance Examination (SLEE) have been prescribed for admission to engineering and architecture programs. It offered a lot of convenience. New Education Policy (NEP) 2020, which came after several years, has provided the flexibility in education system and employable education with help of skill development courses. The on-line education with multi-entry and multi-exit options is possible in new information technology, Skill development and vocational training will be promoted to increase the employability at various levels in the education system, Creating a single research fund for all the areas and one regulatory body is major step for overall development in education and research to encourage the healthy competition in Indian education system, the permission of foreign universities in India is a welcome move. A common examination for the admission to the colleges will be offered so that pressure and inconvenience of students and their guardians can be minimized. Professional bodies involved in research and development in India and abroad are instrumental in implementation of new education policy through workshops, conclaves, conferences, etc.

The Institute of Electrical and Electronic Engineer (IEEE), USA is the largest professional body in engineering and technology, and it is involved in many educational and accreditation activities around the globe. The ABET and pre-university education programs of IEEE are focused areas for improving the engineering education in the world. Some initiatives such as Smart Global Village, humanitarian technology activities, women in engineering, etc. are very effective in promoting skill development and generating the employability at the local bodies.

The concept of Flexible Academic Program (FAP) proposed by Prof Neetish Purohit, IIIT Allahabad is very effective and very useful as per direction of NEP 2020. He has organized as series of events for FAP The outcomes of brainstorming sessions organized should be considered in refining and implementation of the concept and approach. visited the site of FAP and found the details which are very informative and clear.

'We want the education by which character is formed, strength of mind is increased, the intellect is expanded, and by which one can stand on one's own feet.'

Swami Vivekananda

Foreword by the Director CFIIIT

Prof. D V L N Somayajuly

Director, IIITDM Kurnool and
Director (Acting), IIITDM Kancheepuram

I am very happy to associate with IIIT Allahabad for implementing Flexible Academic Program (FAP) initiated in connection with National Educational Policy 2020. The document prepared by the team of experts from this great Institute is very informative and covers most of the NEP initiatives. In fact, IIITDM Kancheepuram and IIITDM Kurnool has signed Memorandum of Understanding (MoU) with IIIT Allahabad for implementing the NEP activities for the benefit various students with greater flexibility for them to learn based learning by doing. The evaluation system designed under this is very well designed.

I am very much eager to implement in associated with faculty of the three Institutions certain activities in pilot mode in order to devise stringent, quality oriented metrics for smooth implementation and strengthening various initiatives under National Education Policy 2020.

I will be happy to be involved with this initiative and wish that all are implemented.

Foreword by the Director CFIIIT

Prof. Pravin N Kondekar

Director (Acting), IIITDM Jabalpur

We are extremely happy to extend our heartiest congratulations IIITA Faculty for conceptualizing the FAP (Flexible Academic Program) under the lead of Prof Neetesh Purohit. We all know that among the Institute of National Importance all over the Nation there is a very little interaction and that too only for sharing govt. policies, rules and regulations etc. But we were missing identifying the strength of every institute in teaching and research. If all institute implements FAP then we are opening ample opportunities to students for choosing their subject of interest even from other Institutes.

Multi Exit and Multi Institutional Program requires a great Interaction among the institutes and faculty which will happen perhaps for the first time in Higher Education in India among the institutes adapting FAP. If at the entry level of the institute itself the students is aware and choosing admission through FAP scheme. He will developing his own scheme for choosing various subjects across the institutes adopting FAP. This certainly a great initiative to leverage institute's resources and strengths to others.

In my opinion FAP truly represents the mechanism for implementation of major part of NEP-2020 announced by Hon'ble Prime Minister in higher education sector. We too at our institute have initiated a proposal of FAP to be deliberated in upcoming senate meeting and we are confident that we will adopt it soon.

We wish all INI come together to facilitate our students to get maximum benefits of learning through this FAP implementation in all INI to begin with all IITs.

Preface

Dr. Vijay Kumar Chaurasiya

Institute Co-ordinator (FAP), Associate Professor
IIIT Allahabad, Prayagraj

IIITA has developed an innovative framework named "Flexible Academic Program" (FAP) that offers a lifetime educational subscription to individuals who are willing to avail the opportunity of continuous learning throughout their lives. This program has been designed based on the recommendations (for higher education) of the New Education Policy (NEP) - 2020. The FAP aims to seek the services of the best faculty and resources available nationally and internationally to provide a comprehensive learning opportunity to the candidates. A candidate can get enrolled in the FAP program irrespective of their background, caste, religion, financial status, urban/rural background, and age in an inclusive manner. It will provide multiple entries and multiple exit options to the candidate to continue their learning and upgrade their skill sets/educational qualifications at any age. FAP will also offer the candidates multi-disciplinary, multi-institute, multi-mode, multi-lingual and lateral entry options. Further, IIIT Allahabad, with an industry collaborator, has developed the FAP Integrated Services (FAPIS) platform for FAP students as a single point solution for their record-keeping, institute migration, credit transfer and management, etc. This unified IT platform will keep a record of seamless carrier development of the students.

The provisions of FAP will result in a great qualitative shift in the professional students' skill set, which will become visible soon; many more such possibilities are contained in the FAP. It can be more systematically implemented through a centralized nodal agency called FAP Consortium. Identifying this, IIITA has already sent a proposal to the Ministry of Education (MoE) for building a Multi-disciplinary Education Research University (MERU) for the wide-scale implementation of FAP. In the FAP program, a student will have the option to study the first year in one institute, the second year in the same or some other institute, and so on. The FAP will enable the students to think and plan their learning in different institutions.

The primary objective of FAP is to generate skilled professionals required for "Atmanirbhar Bharat Mission" of our Prime Minister, Shri Narendra Modi. It would help to improve multi-disciplinary education, research, employability and learning from pioneers. In addition, the FAP will allow the students to avail different courses of their choice like humanities, management, art, science, engineering and technology, mixed-mode teaching methodology, i.e. physical and virtual mode and increased revenue for the participating institutes/universities.

Together we shall bring change in the professional education landscape and make our nation great again!

Theirfore let's join hands together to implement the FAP in IIIT Allahabad and other institutions of national importance.

Jai Hind, Jai Bharat!

Abstract

Prof. Neetesh Purohit

National Co-ordinator (FAP) and Dean (Academics)
IIIT Allahabad, Prayagraj

The national Education Policy 2020 (NEP2020) was announced by the Government of India on 29th July 2020. Immediately, IIIT Allahabad undertook a thorough study of NEP2020 and found that it is indeed a great visionary initiative towards building a self reliant developed nation. Therefore, with the aim of effective implementation of NEP2020, the institute decided to develop a novel innovative framework along with backbone ICT support system, over which all educational institutes of India should be able to more easily interact and contribute in imparting quality education to all students irrespective of their location. Starting from September 2020, the Institute organized several events including Webinars, Seminars, and National Conference etc. to gather proposals/consultations from eminent academicians, administrators and researchers affiliated with IITs, IITs, NITs, NITI Aayog, AIU, AICTE, and state technical universities. As an outcome of this rigorous exercise, IIITA Prayagraj has delivered **"Flexible Academic Program (FAP)"** framework, and has announced that 50 candidates will be admitted via JoSAA-2022 under FAP framework.

Why students should prefer FAP

The NEP-2020 has clearly stated that, "Inclusive and equitable quality education and to promote lifelong learning opportunities for all require the entire education system to be reconfigured to support and foster learning." The proposal FAP framework is perfectly aligned with the vision of NEP 2020 which ensures the availability of "lifelong learning opportunities" to the students through innovatively infusing the standard B. Tech, M. Tech., and Ph.D. programs (including working professional mode) in an integrated package, wherein the course credits once earned can be utilized whenever it is required. The FAP frame work facilitates multiple exit points with highly simplified re-entry mechanism from the point of exit. The "equitable quality education" needs involvement of highest quality teachers working in top rated institutes of India and abroad in teaching the FAP students studying in various institutes/colleges/universities. FAP has introduced multiple systematic ways to address this requirements. To begin with, teaching through ONLINE/Hybrid mode involving local teachers is enabled, later on short visits to various higher ranked institutes may also be enabled for performing experiments/project/internship etc. An innovative per credit-based tuition fee system has also been introduced in FAP for supporting practical financial needs under such

arrangements. Indeed, the FAP is "inclusive" too; on one hand, instead of the current practice of teaching introduction of several technologies through 3-4 credit elective courses, the FAP will impart complete knowledge with entire skill set in a specific latest technology through dedicatedly designed 8-credit minor and 16-credit major modules (several such options will be made available to FAP tudents involving multiple experts from other institutes and industry too). Also studying many multidisciplinary/languages/Arts/Sports/Community Services courses has also been provisioned under FAP. These courses may be either independent or linked adding up to 12 credits specialization in any specific field of Humanities, Social Sciences, Marketing, Finance, General Management, etc. This approach may drastically enhance the employability and entrepreneurship qualities of FAP students.

It may worth haring that many other in titute of national importance and state technical universities have started the process of adopting FAP framework. Very soon, some of them may also announce admission under FAP framework. Also, IIITA has been actively talking to a few reputed foreign universities requesting them to join FAP framework. Furthermore, a completely new framework for conducting placement activities is under active consideration which will ensure better job opportunities for FAP students. All such developments will soon unfold many new benefits to the students admitted under FAP framework.

Benefits to Nation and the institutes who may offer FAP

An economically feasible option for harnessing the human resource and infrastructure facilities in most optimized way has paved the path for conceptualizing the FAP. In the long run, FAP is going to act as a backbone support system through which, all institutes/universities will have soft interlinking. A lot of students are taking one or more years of drop to study Chemistry, Mathematics, and Physics in various coaching classes for getting admission in a high-rated institute. It is not only a huge useless financial burden on their parents, but it is a great loss to the nation too, as its best minds are getting delayed to serve the nation. To this end, FAP is creating a great opportunity to all deserving students to learn and interact from highly qualified faculty members associated with renowned institutes. This arrangement may motivate these students not to go for the DROP option but to study engineering subjects with similar devotion to avail the above said opportunity of learning engineering skills from experts. By this, a great qualitative shift in skills of engineering students may become visible in near future.

The FAP is beneficial for institutes, colleges and teachers too. Observing the advantages of FAP, there is a possibility that better quality students may be attracted to get admission under FAP framework, at lower ranked institutes/colleges which may ultimately uplift the overall student's intake quality. While offering specialized modules to the FAP students (even in ONLINE mode) the teachers of higher ranked institutes will require support of a few local teachers/research scholars for undertaking lab/project workshop pertaining to the respective modules. Some of these trained students will be able to undertake multidisciplinary projects under institute's faculty member . All such things will surely open up new collaborations opportunities for undertaking joint research and development activities. Besides offering courses to the institute's FAP students, the faculty members may offer the same or other courses to FAP students of other institutes (if it is allowed), it may generate additional revenue for the institute and the teacher.

Particulars of FAP implementation at IIITA

The flexibility to choose the courses (i.e. subjects) offered by different teachers. belonging to the same or different institutes with different per credit tuition fee, flexible languages of instructions for different courses (as available), flexible mode of teaching i.e. ONLINE/On Campus/Hybrid as offered by the registered teachers, flexibility to speed

up/down learning by adopting more (up to 24) or less (minimum 10) credits in each semester and to cover some credits during summer/winter breaks (up to 12 credits), etc. is permissible under FAP framework. In the standard FAP curriculum of llITA, after building robust fundamentals in the first five semesters either in the field of Information Technology or Electronics and Communication Engineering, 8-credit minor specialization modules belonging to the respective field in the 6th semester, and 16-credit major specialization modules in the 7th semester will be offered. The slot for learning independent multidisciplinary/languages/ Arts/Sports/Community Services courses have been created in almost each semester, moreover the option of choosing interlinked courses in 1st, 2nd, 5th and 6th semester courses has also been provisioned to earn a 12 credit specialization in a specific multidisciplinary/ languages / Arts /Sports streams. The 8th semester will have a major project along with the choice of going for internship in a reputed company (from the approved list) or opting multidisciplinary/HSS courses.

The FAP student may avail the 1st exit option after completion of 120 Credits, the 2nd exit option after completion of B. Tech Degree requirement of 160 Credits, the 3rd exit option after completion of M. Tech Degree requirement of 225 Credits+ 2 Research Credits and the 4th and final exit option after completion of PhD Degree requirement of 260 Credits+12 Research Credits. A FAP student who may opt any of the aforementioned exit points will be eligible for continuing the next higher study program in either regular (in campus) or working professional (along with job) mode. However, at the time of re-entry they may be asked to earn some additional credits. These facilities may enable the FAP students to more systematically plan/prepare for other goals of their life including the placement activities.

Here, it may worth mentioning that I Credit can be earned after completing a course having either 1 hour of Lecture, or 2 Hour of Tutorial or 2 Hour of Practical in a semester time (i.e. 18 weeks including holidays and assessment/ examination periods), whereas research credits can be earned by performing various research activities, such as, publishing papers in conference/journals, patents, start-ups, conducting sessions in workshop, etc. as may be defined from time to time by the institute. Whenever a student could not qualify for a course, he will be dropped and no credits will be earned by him. In the case of a hard core course, the student needs to again enroll in the course whenever it is offered next time (may be in a different institute/ with a different teacher). However, in case of HSS or soft core courses, he may opt for another subject in subsequent sessions. The working professional mode of study requires a student to convince a teacher about his research idea which is duly supported by his employer too. Then the teacher will prepare a customized plan for the students and after its ratification by a competent committee the admission may be offered in the working professional mode for earning M.Tech./Ph.D. degree.

General norms and conduct rules for FAP students may be same as applicable to non-FAP students of lIlTA except the clauses which are explicitly defined for FAP students, like, tuition fee. The FAP students need to pay for the respective FAP course fee chosen by him/her in each session (Jan-Jun/July-Dec), along with other applicable fees. The FAP students of another institute who may visit IIITA will be required to pay additional fee for hostel and other facilities as may be defined by lIITA FAP students vi it other institutes then such an additional fee needs to be paid by them. Per credit tuition fee of all courses offered by IlITA teachers to FAP courses has been defined as Rs. 3000 (with 10% annual increment) for 2022 batch. Once the system becomes mature, this decision-making may be transferred to the respective main teacher of each course/module. The Fee of specialized modules/Courses developed by other institutes will be decided by the main teacher of the respective module. Depending upon the lab/hands-on expenses/brand name etc. parameters some of these courses may be costlier and hence it may become possible that FAP students, who opt for such costly modules may need to pay more fees as compared to those students who would

choose low cost courses/modules. In principle, offering courses with no tuition fee, as a service to the nation, may be permissible to renowned teacher of CFTIs and other similarly placed institutes.

The ICT backbone support system for FAP implementation

Soon, FAP Query Response System (FAP-QRS) and FAP Integrated Services (FAPIS) ICT platforms will become operational. Only the FAP students/teachers/institutes can use FAPIS, but FAP-QRS will remain available for all persons for posting any query and getting suitable response. The FAPIS will maintain a block chain technology based perpetual academic bank of credits (ABC) allowing the FAP students to redeem the predefined number of earned credits to get a degree and exit. Hand shaking with other ABCs, digital certificates, inters institute movement with credit transfer, non-overlapping course allotment, ONLINE examination system, etc. many services will be offered to the FAP students through FAPIS. In future, if any other institute/university/college adopts FAP then FAP-QRS and FAPIS services may be extended to their students too.

The courses offered by various teachers will be displayed on the FAPIS dashboard of each student and they can choose any course subject to satisfaction of the prerequisite conditions (if any). Each student will be able to choose the relevant course floated by his parent institute's teacher. He may choose another institute's teacher' course too (in ONLINE mode, unless ON Campus is explicitly mentioned therein) as visible on his FAPIS dashboard. Excluding the extreme scenario like COVID-19, a student cannot opt for more than 40% credits in online mode (it includes HSS courses) with reference to the next exit point, i.e. for the students admitted via]oSAA the 1st exit point is after earning 120 credits so maximum 48 ONLINE Credits may be allowed, however, if a student declares to take the exit after 160 credits then ONLINE 64 Credits may be allowed to him by the FAP Coordinator, who may, however, consider individuals requests and permit opting more ONLINE Credits too. A pre-fixed class timetable from 9 AM to 9 PM on all 7 days (including Saturday and Sunday) will be made available through the FAPIS platform, before opting for a course the students will be able to see it class timings, lecture plan, involved teachers, etc. Highly demanded courses may run in multiple slots simultaneously by different teachers.

Multidisciplinary Education Research University (MERU) for FAP

For accomplishing larger goals of FAP framework there is a requirement of establishing a Multidisciplinary Education Research University (MERU) which may manage FAPIS and work for making available new opportunities of high quality learning, bulk placements, interdisciplinary research collaborations at national and international levels, etc. The FAP units which may be physically located in various institutes/colleges should be virtually attached to this MERU for availing such benefits. Identifying this need, IIITA has already sent a complete proposal to Ministry of Education (MOE) containing Draft of the Act, statues, and ordinances. This MERU may become instrumental in opening up many new dimensions, and hence, several innovative opportunities for all students will become available.

Extending the idea of building FAP consortium involving all similarly placed institutes 'Summer Semester' may be used for managing FAP students temporary visits to other institutes of the consortium, learning some courses ON Campus mode, and returning back to the parent institute in the next regular session. A student may plan an exclusive stay in another institute for duration of one full semester after availing such a facility through FAPIS. Moreover, independent FAP consortiums should be created by all state level technical universities, and opportunities can be created for a few toppers of such state level consortiums may be given opportunity to switch to CFTI's consortium in near future by creating a few supernumerary seats in each CFTl. I am pleased to share that AKTU Lucknow, GTU

Ahmedabad and a few other state level universities have already started working in this direction. All such consortiums may also work under the MERU. As soon as MERU becomes operational, the new age of the education system will prevail across the country.

Acknowledgement

At this juncture, I must thank all those persons who have directly or indirectly contributed in developing the FAP framework like Shri Atul Kothari, Prof. P. Nagabhushan, Padmashri Prof. Manindra Agrawal, Prof. Vidyasagar, Prof. Anil Sahastrabuddhe, Prof. Unnat Pandit, Dr. Anand Deshpande, Prof. V. K. Tewari, Prof. Rajakumar, Prof. Rajat Moona, Prof. Sandeep Shukla, Prof. Ajay Sharma, Prof. P. K. Mishra, Prof. N. C. Seth, Dr. Chinmay Pandya, Prof. Badrinarayan and many more persons perhaps this list is endless. Dr. Manish Arora, BHU and his team deserve special thanks for designing the FAP logo.

The first draft on FAP was prepared by a committee consisting of the Member of Board of Governor, IIITA Shri Rahul Singh, eminent members from Senate IIIT Allahabad Prof. K. C. Gowda, and former Vice Chancellor Mumbai University Prof. Sanjay Deshmukh Chaired by the then Dean(Academics) Prof. Tapobrata Lahiri. Later on, IIITA Senate's subcommittee consisting of Prof. A. G. Ramakrishna IISc Bangalore, Prof. Ganesh Ramakrishna IlTB Mumbai, Dr. Santanu Dasgupta Vice President Reliance Industries, and a few internal Senate members including Prof. U. S. Tiwary, as chairperson of the committee, chalked out the guidelines for admitting the students under FAP framework at IlITA Prayagraj through JoSAA with effect from academic year 2022-23. Hon'ble Minister of State for Education Govt. of lndia, Dr. Subhash Sarkar, released these guidelines in ONLINE mode as a part of IIITA's closing ceremony of 'Beyond Twenty by 2020' flagship event. I have been fortunate to be a part of the above said committees.

I am grateful to the SSUN, MaE, IEEE, DIC Spoke IIITA, BOG, Senate, FC of IIITA, AKTU, GTU, UP Govt. and a few other organizations for extending their support in faster implementation of FAP framework. Contributions of lIlT A's section-8 company (IIIC) and its industry partners. C3i Hub IITK, the consultants and coordinators of FA PIS team are also acknowledged.

"As a crucial step to lead India into the fourth industrial resolution, multidisciplinary education is vital. Even engineering schools such as IITs will move towards more holistic multidisciplinary education with more arts and humanities; while arts and humanities students will need to learn more science. And this will be compounded with an effort to include more vocational subjects and soft skills."

–Padma Vihushan Hon'ble K. Kasturirangan

A Brief presentation on Flexible Academic Program (FAP) Long Term Vision

लचीला शैक्षणिक पाठ्यक्रम

(A framework for achieving the goals of NEP 2020)

- ✓Multi Exit
- ✓Multi Entry
- ✓Multidisciplinary
- ✓Multi-Mode
- ✓Multi-Institute
- ✓Flexible Fee
- ✓Holistic Approach
- ✓Multi-Language Medium
- ✓Continuous Assessment

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 उच्चतम शिक्षा प्रणाली में आमूलचूल बदलाव और नए जोश के संचार के लिए उपयुक्त चुनौतियों को दूर करने के लिए कहती है''
-राष्ट्रीय शिक्षा नीति 2020 अनुभाग 9.3

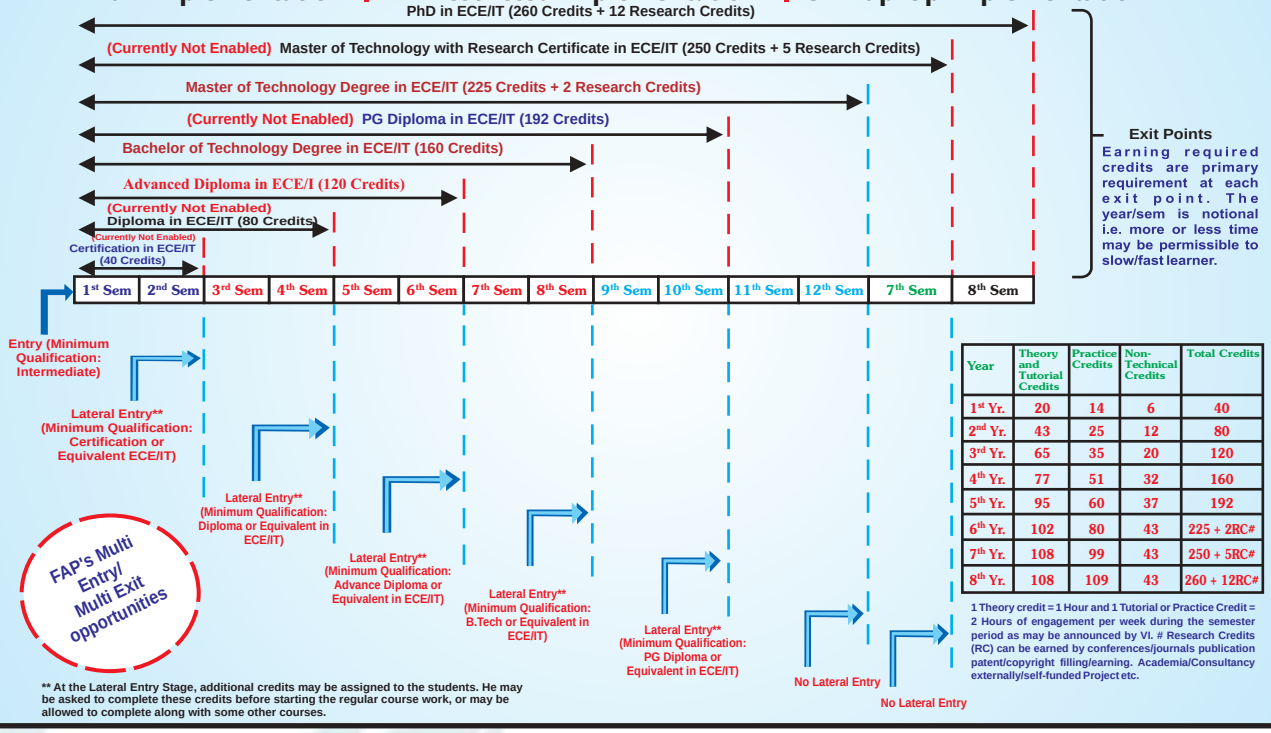
पृष्ठभूमि

- 29 जुलाई 2020 को राष्ट्रीय शिक्षा नीति 2020 जारी हुई इसके उचित क्रियान्वयन हेतु ट्रिपलआईटीए, प्रयागराज ने व्यापक विचारमंथन हेतु प्रयास शुरू किये 5 सितम्बर 2020 को ट्रिपलआईटी, फिर 17 सितम्बर 2020 को एनआईटी, और फिर 20 सितम्बर 2020 को आीआईटी के निदेशकों और शिक्षकों के लिए आयोजित वेबिनार में लचीला शैक्षणिक पाठ्यक्रम का प्रारूप प्रस्तुत किया गया तदन्तर देश के विभिन्न हिस्सों में अनेक संगोष्ठियों का आयोजन हुआ; ट्रिपलआईटीए प्रयागराज, एनआईटी पटना, ट्रिपलआईटी पुणे जैसे राष्ट्रीय महत्व के संस्थानों की सीनेट (Senate) में चर्चा हुई; आईट्रिपलई, एआइयू, शिक्षा मंत्रालय, नीति आयोग, AICTE जैसे संस्थाओं से जुड़े विशिष्ठ व्यक्तियों एवं अन्य अनेक विशेषज्ञों से मिले सुझावों को समायोजित करते हुए 'लचीला शैक्षणिक पाठ्यक्रम' (FAP) का एक प्रारूप तैयार हुआ। 3 और 4 दिसम्बर 2021 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 शिक्षकों), कुछ राज्य तकनीकि विश्वविद्यालय के कुलपति, एआईयु (AIU) शिक्षा मंत्रालय, नीति आयोग, AICTE जैसे संस्थाओं से जुड़े विशिष्ठ व्यक्तियों के साथ ही अन्य अनेक गणमान्य विशेषज्ञों ने उत्साहपूर्वक सहभागिता करते हुए सार्थक चर्चा की।
- ट्रिपलआईटीए, प्रयागराज की सीनेट ने FAP के प्रायोगिक क्रियान्वयन के प्रस्ताव की समुचित समीक्षा के लिए 3 एक्सटर्नल और 6 इंटरनल सीनेट सदस्यों की समिति का गठन किया। इसी समिति की अनुशंषाओं के अनुरूप सीनेट ने वर्ष 2022-23 से JoSAA 2022 द्वारा 50 छात्रों को FAP के तहत प्रवेश देने की अनुमति दी।
- ट्रिपलआईटीए, प्रयागराज द्वारा स्थापित सेक्शन 8 कंपनी IIIC ने FAP के प्रायोगिक क्रियान्वयन के लिए FAPIS प्लेटफार्म बनाने और इसे सभी अन्य संस्थाओं (जो भी FAP लागू करेंगे) को उपलब्ध कराने हेतु आवश्यक कार्यवाही शुरू की।

Flexible Academic Program "FAP"

WAYS OF IMPLEMENTATION

1 – Full Implementation | 2 – Restricted Implementation | 3 – Tup-Up Implementation



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

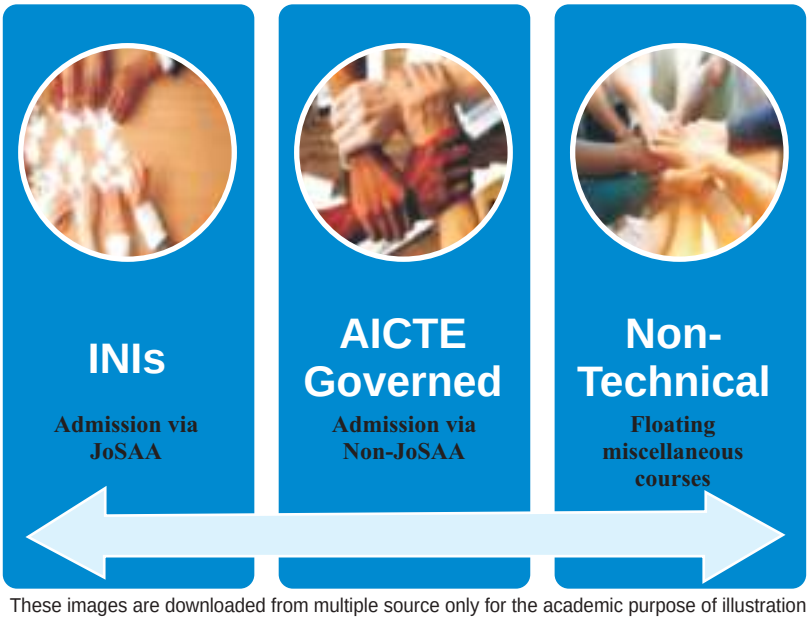
1 Theory credit = 1 Hour and 1 Tutorial or Practice Credit = 2 Hours of engagement per week during the semester period as may be announced by VI. # Research Credits (RC) can be earned by conferences/journals publication patent/copyright filling/earning. Academia/Consultancy externally/self-funded Project etc.

** 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 course work, or may be allowed to complete along with some other courses.

Proposed FAP Consortiums and MERU

Type-1 :
Institutes of National Importance (INIs)
- IITs: Admission via JEE Advance
- NITs/IIITs 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)



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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.

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

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

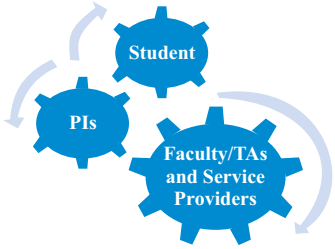
Proposed Financial Model

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 offer 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

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 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/she should move ahead through M.Tech. 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 of MERU

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. Processional 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 database 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 fledghed 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. Enterpreneurship, 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, Cyber security, Data Science, etc.) based on the elective courses that specialization.
160*	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 skill in the chosen field of research.	
260* + 12#	Reputed Journal Paper Publications, Patent Filing, Thesis Writing, Consultancy projects.	

#RC
** Details given in table*

As long as prerequisite conditions are satisfied, the students may opt more OR less credits in a given semester to choose early or later completion of the chosen exit points credit requirements.

Backbone ICT Support System for FAP

FAP Query Response Systen (QRS) is designed to provide sings window system for contain are query & getting suitable response.

FAP integrated service (FAPIS) plateform will provide following services.

A) Interactive Dashboards for students, Teachers, supporting teachers, Institute's/College FAP coordinator, Head of the consortium, etc.

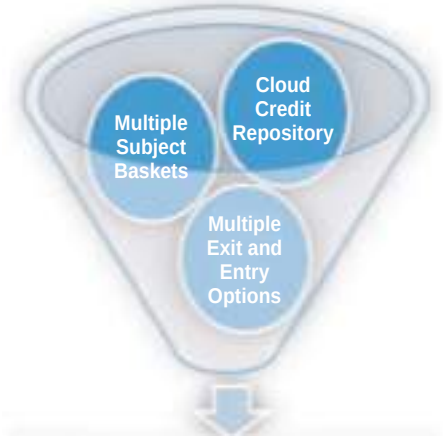
B) Financial Transactions via 3rd party interface.

C) Academic Bank of Credits (ABC) implementation for FAP students. And its possible hand shaking with other similar ABCs as may be decided by the consortium heads.

D) Generating marksheet, transcripts, degree, certificates etc. and making it available via digilocker.

E) Data verification by employers.

F) Mobile as well as desktop interfaces, etc.



Accreditation for every exit points with associated options for re-entry
through Block Chain enabled secured Cloud Repository

Steps for Implementation of the NEP 2020 via FAP

- **FAP students**
- **a)** After getting admission in FAP in any discipline in any affiliated college/institute of any consortium, each student needs to enroll himself on FAPIS and pay the enrollment fee of Rs. XXXX into 'IIITA Infocummunication Incubation Center' (IIIC), bank account via online mode. (IIIC is a section 8 company constituted by IIITA Prayagraj, which is developing and maintaining the FAPIS platform.)

b) The student shall be given a portal where he/she can select courses of choice as per the rules governing the consortium and applicable to the degree program of the student. She can select the on campus courses only in her parent institute, however online courses may be opted in any other institute of the consortium.

c) After selecting maximum allowable courses (as may be defined by the consortium), he needs to pay the fee for these courses and other applicable fees of his/her parent institute via ONLINE mode into consortium heads bank account.

d) Depending upon the intra consortium movement norms, the student may be allowed to visit another institute after completion of 1st year/2nd year and so on. Accordingly, the students who will be allowed to visit another institute will have to pay the residential fees of the visiting institute and the retention fee of the parent institute too for the said duration.

e) The continuous assessment approach will be followed and the student will be able to see the marks awarded to him/her as soon as it is uploaded after each assessment. Also, after completion of the course the final marks/grades of each subject, the updated transcript, accumulated credits, and other details like fee paid, etc., will remain visible to him/her.

B) FAP Main Teachers

a) Any teacher of the participating Institutes, the Institutes of National Importance (INI) or other similarly placed institutes as may be chosen by the consortium may become Main Teacher. He will choose the course with he wants to offer and specify the maximum number of on-campus (Physical mode) and ONLINE students whom he would like to teach, the fee for the offered course, the language of instructions, etc. relevant details

b) He needs to choose the slot from the available slots for conducting lectures, tutorials and practice sessions (as per the assigned credits to the course e.g. if a course has LTP = 1:1:1 then the teacher needs to choose 1 hour lecture, 2 hour tutorial and 2 hour practical slot). It may be on a 'first come first serve' basis during 8AM to 8PM on weekdays. The HESS subjects may however be allowed on weekends too.

c) He MUST enter all the aforementioned information after obtaining consent of the FAP coordinator (or any other competent official) of his/her institute/college. The teacher of and may be there in more than one consortium.

d) As per frozen timetable he/she needs to conduct the course with the help of supporting teachers, undertake continuous assessments and keep uploading marks of all enrolled students on FAPIS after each assessment session and the final result of each student.

e) From the total fee collected from students for opting this course, X1% will be paid to the main teacher, X2% to the supporting teachers, X3% to the college/institute to which the teacher is affiliated, X4% to the consortium head, X5% to FAPIS. The consortium will decide the values of X1 to X5.

Continue...

C) FAP Supporting Teachers

a) The main teacher may choose his colleagues or M.Tech./Ph.D. students of any institute as a supporting teacher. Particularly, the subject teachers of the parent colleges/institutes of those students should be involved, who have joined the course in ONLINE mode. The list of such teachers with contact details will remain available on the main teacher's dashboard.

b) They need to follow the instructions of the main teacher in Toto.

D) FAP Institutes/College Coordinators

a) The information submitted by the teachers of respective institute/college, the status of their own students should be visible to coordinators.

b) They can raise flag in case of any inconsistency. They can also talk to concerned entity and help rectify the errors/inconsistencies.

c) They will ensure that the payments to the main teachers and supporting teachers should be done within time.

d) They will be responsible for providing various facilities to the main/supporting teachers, and the students as may be needed for smoothly conducting the teaching/assessments.

E) FAP Head of Various Consortium (via IIIC)

a) Entire information both academic as well as financial should remain visible to him.

b) He has authority to instruct IIIC for making any changes in the rule position or any such policy decision.

F) FAP Administrator (MERU Head via IIIC)

a) He is the super user who will have the responsibility to ensure smooth running of all services via IIIC. It includes proper financial transactions involving 3rd party platforms.

b) He needs to keep on adding new innovative features and facilities for making the experiences of all users.

c) Confidentiality, security, authenticity etc. issue need to be addressed.

d) Google classroom, etc. external facilities e.g. conducting ONLINE examination etc. may be suitably integrated.

IIITA Admin Block @ Front

IIITA Admin Block @ Back

Proposed fine tuning in GATE to facilitate Inter-consortium movement under FAP

The Chaos theory's famous saying 'A butterfly flaps its wings in the Amazonian jungle, and subsequently a stormravages half of Europe', appears to be a close equivalence while proposing a few minor changes in GATE as these may potentially bring huge changes in the Indian academic system and the society. Following are such simple proposed fine tunings in GATE

(A) The current syllabus of GATE for each stream should be partitioned into 4 sections. The section I should more or less contain the contents which are usually taught in 1st year B.Tech/BE of various Institutes/universities. Similarly the 2nd, 3 rd and 4th sections should be close to whatever is taught in respective year of B.Tech/BE program.

(B) The GATE question paper should also have 4 parts. Each part should have the questions from the respective section as mentioned above. Further, the score of the candidates should be separately recorded for each part of the question paper. And the final score may be obtained by adding these scores (it may be a simple addition OR proportionate addition).

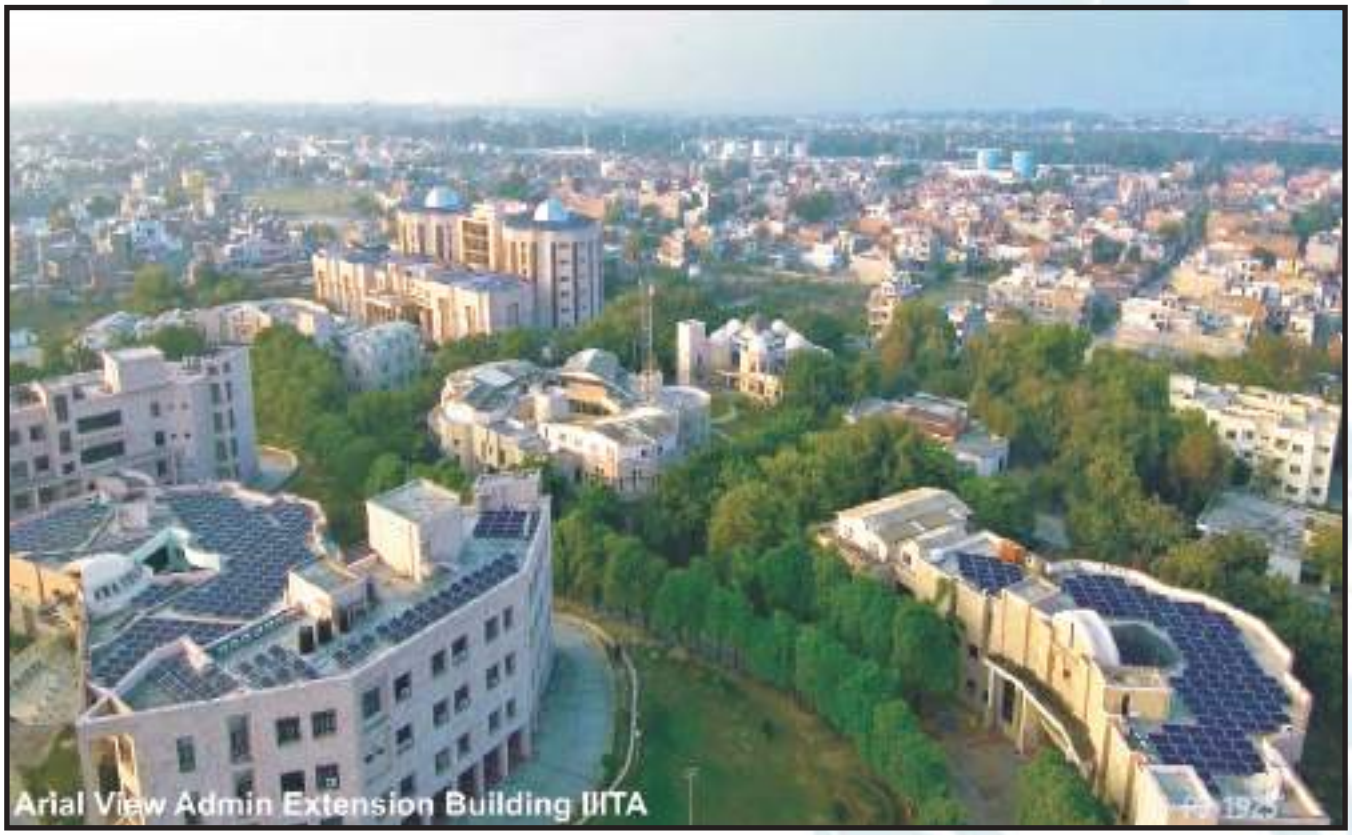
(C) All students studying in any B.Tech/BE/Integrated or equivalent courses in any year of their study should be officially allowed to appear for respective (including lower rung parts of the GATE paper) i.e. a student studying in 3 rd year of B.Tech/BE program in any recognized institute/college/ university should attempt the 1st, 2nd and 3rd part of the question paper. Ifs/he skips any part then zero score should be assigned to her/him in that particular part. Accordingly, the fee charged (perhaps time duration of writing answers too) for GATE exam may be proportional to the number of parts the student is supposed to attempt, i.e. if X is the full GATE fee then X/4 may be the fee for appearing in each part.

The (A) and (B) above are small modifications, so these may be incorporated w.e.f. GATE 2023, however, part (C) may need little more time for flawless implementation so it may be done w.e.f. GATE 2024,oras the NCB may deem fit.

These small changes in GATE may trigger following possibilities:

1) PSU's may like to use the GATE score after 3 year instead of 4 year. Then, it will give a major jump to admissions in PG program, because the students who are to be placed already got their placement based on 3rd Year level GATE score. In such a scenario COAP (Common Offers Acceptance Portal) may not be needed.
2) In the light of NEP2020 a few novel innovative academic programs may be designed which may allow movement of students during their course of study, i.e. after 1 st/2nd/3 rd Yr or so. The above said GATE scores (from various partitions) may play significantly role in transparently moving the deserving students upwards, and perhaps a few non-performing students downwards too.
3) Over the time, the syllabus of JEE Mains/Advance may be redefined which will reduce pressure on the school students, e.g. a lot of Mathematics/Physics may be moved into 1 st year B.Tech. GATE syllabus (Chemistry may be there for relevant streams only). Perhaps, such developments may rule out conducting JEE Advance examination after a few years. In long run, there may be many more positive changes e.g. significant reduction may be observed in the number of students who choose to drop one or more year to prepare for JEE Mains/Advance.
4) Pvt. Companies may organize all India Campus Placement (or internship) by innovatively using these part wise GATE scores and using ONLINE interview. Perhaps, they may find a better mechanism too. As an end result the importance of the place/institute of study may be deemphasized.
5) Some institutes may be interested in linking these part wise GATE scores in CGPA calculation, and/or rules for awarding scholarships, merit/honors certificates, institute's/Endowment medals etc.

FAP Curriculum & other Important Details


Arial View Admin Extension Building IIITA


Admin Building Main Entrance-IIITA

Title of Degrees, Specializations, Minor and other relevant details

The students admitted under FAP will have opportunity of choosing one of many specialization modules belonging to their parent stream as well as the other stream (IT, ECE etc.). However, specially designed bridging (basic) modules must be completed to become enable to opt for the specialization module. Accordingly, one of the following exit points may be availed by each student admitted under FAP :

1) After earning 120 Credits (in the proportions mentioned in the curriculum), the awarded degree will be as follows,
   (a) For the students admitted in IT Stream via JoSAA : Advanced Diploma in IT.
   (b) For the students admitted in ECE Stream via JoSAA : Advanced Diploma in ECE.
2) After earning 160 Credits (in the proportions as mentioned in the curriculum), out of which credits from one of the specialization modules (xxxx) of the parent stream are earned, then the awarded degree will be as follows,
   (a) For the students admitted in IT Stream via JoSAA : Bachelor of Technology in IT with specialization in xxxx.
   (b) For ECE stream : Bachelor of Technology in ECE with specialization in xxxx.
3) After earning 160 Credits (in the proportions as mentioned in the curriculum), out of which credits from one of the specialization modules (xxxx) of the other stream are earned (in lieu of the specialization module of the parent stream), then the awarded degree will be as follows,
   (a) For the students admitted in IT Stream via JoSAA : Bachelor of Technology in IT with Minor in xxxx.
   (b) For the students admitted in ECE Stream via JoSAA : Bachelor of Technol;o;gy in ECE with Minor in xxxx.
4) After earning 160 Credits (in the proportions as mentioned in the curriculum) out of which credits from one of the specialization modules (xxxx) of the parent stream are earned, and additional 16 credits (12 credit specialization module +4 credit relevant project) over and above the 160 credit are also earned from one of the specialization modules of the other stream (yyyy), then the awarded degree will be as follows,
   (a) For the students admitted in IT Stream via JoSAA : Bachelor of Technology in IT with specialization in xxxx and Minor in (yyyy).
   (b) For ECE stream : Bachelor of Technology in ECE with specialization in xxxx and Minor in (yyyy).

5) After earning 160 Credits (in the proportions as mentioned in the curriculum), out of which credits from one of the specialization modules (xxxx) of the parent stream are earned, the student becomes eligible to register for any number of other specialization modules of the parent or the other stream (after qualifying the respective bridging module). After successfully qualifying all such parent (other) stream modules (12 credit specialization module +4 credit relevant project), respective additional specialization (Minor) will be awarded.

6) Through the procedure as elaborated in para (5) above, if a student accumulates 225 Credits, out of which 12 credits of M. Tech. Thesis (in the field of xxxx specialization) and earning 2 research credits are mandatory. The degree of M. Tech. in the parent stream of xxxx (i.e., IT or ECE) with specialization in xxxx will be awarded.

7) After earning a B. Tech Degree, the student becomes eligible to choose a supervisor and earn a total of 225 credits and 2 research credits as per the supervisor's recommendations in the field of xxxx specialization in line with the IIITA's M. Tech (by research) and/or M. Tech (for working professionals) ordinance(s). After successfully earning the credits as mentioned above, an M. Tech degree in the parent stream of xxxx (i.e., IT or ECE) with specialization in xxxx will be awarded.

8) After earning the M. Tech degree, as elaborated in para (6) or para (7) above (either in regular or working professional modes), the student will become eligible to choose a Ph. D. Supervisor. As per the recommendations of the chosen supervisor the student needs to earn a total of 260 credits and 12 research credits to get the award of Ph. D. Degree in line with IIITA's Ph.D. (regular) and / or Ph. D. (Working Professional) ordinance(s) after fulfilling the requirements of Ph.D. candidates applicable in IIIT Allahabad ordinances.

"We want the education by which character is formed, strength of mind is increased, the intellect is expanded, and by which one can stand on one's own feet."
NEP 2020 Introduction para

FAP Curriculum in B.Tech. Information Technology

Recommended credits in each semester for B.Tech. IT

Maximum Allowable Credits per Semester: 24

Minimum Allowable Credits per Semester: 10

Semester / Courses	1st	2nd	3rd	4th	5th	6th	7th	8th	Total Cr.
Technical Courses (Core/Electives)	18+2#	16+1#	16	20	16	12$	16$	0	112+3#
HSS Courses (Electives)	2	2	2	0	4	4	0	0	14
Multidisciplinary/Languages/Arts/ Community Services/Sports (Electives)	0	2	4	2	0	2	0	4	14
Project (Core)	0	0	0	0	2	4	2&	12	20
Total Credits	**20 +2#**	**20+ 1#**	**22**	**22**	**22**	**22**	**16**	**16**	**160+3#**

#Orientation Camp I & II Courses will have qualitative grading. This Course will run in Summer & Winter break.

$ The faculty offering these modules may include some project credits too.

& Credits are inclusive and part of 7th Semester.

"We are that our thoughts have made us; so, take care of what you think. Words are secondary. Thoughts live; they travel far."

–Swami Vivekanand

Curriculum of B.Tech. Information Technology

Total Accumulative Credits= 40+3 (First Year)

Semester 1			Total Credit : 20+2	
Sl. No.	**Course Name**	**Type**	**Credit**	**L-T-P**
1.	Physics	Core	4	2–1–1
2.	Linear Algebra	Core	4	3–1–0
3.	Introduction to Programming	Core	4	2–1–1
4.	Fundamentals of Electrical & Electronics Engineering	Core	4	2–1–1
5.	Workshop on Computer Hardware and Networking	Core	2	0-1-1
6.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	2	1-1-0
7.	*Orientation Camp-I *(Qualitative Grading)*	Core	*2*	*1-1-0*
Semester 2			**Total Credit : 20+1**	
1.	Discrete Mathematical Structures	Core	4	3–1–0
2.	Univariate and Multivariate Calculus	Core	4	3–1–0
3.	Computer Organization and Architecture	Core	4	2–1–1
4.	Data Structures	Core	4	2–1–1
5.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	2	1-1-0
6.	Multidisciplinary/Languages/Arts/Community Services/Sports	Elective	2	0-1-1
7.	*Orientation Camp-II *(Qualitative Grading)*	Core	*1*	*0-0-1*

*The Orientation Camp course will have qualitative grading. It is over and above 160 credit requirements of BTech Program. The Orientation Camp –I is named as "India's Contribution to Ethics, Values, Science, Technology and Spirituality" and Orientation Camp –II is named as "Life Skills through Community Service".

#The LTP is just indicative the concerned faculty may change it as per his/her teaching plan, after getting consent from Dean (Academic).

Total Accumulative Credits= 84+3 (Second Year)

Semester 3				Total Credit : 22
Sl. No.	**Course Name**	**Type**	**Credit**	**L-T-P**
1.	Probability and Statistics	Core	4	3–1–0
2.	Theory of Computation	Core	4	2–1–1
3.	Object Oriented Methodologies	Core	4	2–1–1
4.	Operating System	Core	4	2–1–1
5.	A Course from HSS* Basket	Elective	2	1-1-0
6.	Multidisciplinary/Languages/Arts/Community Services/Sports/Design and Innovation Subjects	Elective	4	0-1-1
Semester 4				**Total Credit : 22**
1.	Design and Analysis of Algorithms	Core	4	2–1–1
2.	Principles of Programming Language	Core	4	2–1–1
3.	Computer Networks	Core	4	2–1–1
4.	Software Engineering	Core	4	2–1–1
5.	Database Management System	Core	4	2–1–1
6.	Multidisciplinary/Languages/Arts/Community Services/Sports/Design and Innovation Subjects	Elective	2	1-1-0

"The highest education is that which does not merely give us information but makes our life in harmony with all existence."

–Gurudev Rabindranath Tagore

Total Accumulative Credits= 128+3 (Third Year)

Semester 5			Total Credit : 22	
Sl.No.	**Course Name**	**Type**	**Credit**	**#L-T-P**
1.	Network Security	Core	4	2–1–1
2.	Graphics and Visual Computing	Core	4	2–1–1
3.	Introduction to Machine Learning	Core	4	2–1–1
4.	Artificial Intelligence	Core	4	2–1–1
5.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	4	2-1-1
6.	Minor Project	Core	2	0-0-2
Semester 6			**Total Credit : 22**	
1.	Data Mining	Core	4	2–1–1
2.	**A Basic(bridging) module (Courses, labs/workshops) 1. Wireless Communication and Computing (WCC), 2. Robotics and Machine Intelligence (RMI), 3. Human Commuter Interface (HCI), 4. Cyber Law and Information Security (CLIS), 5. Machine Learning and Intelligent Systems (MLIS), 6. Software Engineering (SE), 7. Data Engineering (DE) 8. Business Informatics (BI) Later on More modules may be added and some of these may be dropped	Elective	8	4-2-2
3.	Mini Project (It may or may not be in the field of the chosen Basic(bridging) module)	Core	4	0-0-4
4.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	4	2-1-1
5.	Multidisciplinary/Languages/Arts/Community Services/Sports/Design and Innovation Subjects	Elective	2	0-1-1

****The Faculty member(s) who are offering a Basic (bridging) module may suitably divide 8 credits into multiple curses/lab/workshop/project with customized LTP components as per their teaching plan.**

Total Accumulative Credits= 160+3 (Forth Year)

Semester 7				Total Credit : 12+4
Sl. No.	**Course Name**	**Type**	**Credit**	**L-T-P**
1.	**An Advanced (specialization) Module (Courses, labs/workshops, Project) 1. Wireless Communication and Computing (WCC), 2. Robotics and Machine Intelligence (RMI), 3. Human Commuter Interface (HCI), 4. Cyber Law and Information Security (CLIS), 5. Machine Learning and Intelligent Systems (MLIS), 6. Software Engineering (SE), 7. Data Engineering (DE) 8. Business Informatics (BI) *Later on More modules may be added and some of these may be dropped*	Elective	12	8-2-2
2.	Mini Project (in the field of the chosen Advanced(specialization) module)	Elective	4	0-0-4
Semester 8				**Total Credit : 16**
1.	Major Project (Thesis)	Core	12	0-2-10
2.	Multidisciplinary/Languages/Arts/Community Services/Sports/Internship/Design and Innovation Subjects	Elective	4	2-1-1

NOTES:

1. A few chosen courses from SWAYAM portal, other institutes courses (recognized by IIITA) in ONLINE/ON Campus modes may be allowed for Multidisciplinary/ HSS/Sports/Arts/Languages/Community services electives baskets.
2. 12-Credits HSS specialization offered by IIITA will be covered during 1st, 2nd, 5th and 6th Semesters in a sequential manner. The student needs to choose one such HSS specialization in the 1st Sem. Independent standalone courses or clubbed courses from multidisciplinary baskets (as approved by IIITA) may be allowed in ONLINE/On-Campus mode.
3. Specialized Basic(bridging)/Advanced(specialization) modules in the field of ECE will be specifically designed and offered so that the students with the aim of giving preliminary knowledge on M.Tech(ECE) and MTech(IT) programs specializations running at IIITA. A few Basic(bridging)/Advanced(specialization)modules developed by other prestigious institutes may also be offered. The student may choose any one of these Basic(bridging)/Advanced (specialization) modules.
   a) Each Basic(bridging)/Advanced(specialization) Module will have several parts.The result of each part will be separately prepared as per the applicable ordinance and should be displayed as follows
   Title of the module:
   Part-I GPI= xxx Part-II GPI=xxx
   Part-III GPI=xxx Part-IV GPI=xxx
   Part-V GPI=xxx Part-VI GPI=xxx
   b) C1, C2 and C3 for each part of the module should be separately evaluated as per CCLCAA ordinance i.e., after completing the 50% syllabus of the respective PART, the C1 score should be submitted. Later on, the C2 score should be submitted after completion of the 100% syllabus, and then C3 should be conducted as a summative assessment. Therefore, the score submission dates for the C1, C2 & C3 of all the courses of various modules may be different than the other regular subjects.
4. Summer semesters may also be used for early starting or late closing of courses as the need may be. No additional fee (excluding food/stay etc. if applicable) may be charged from students in such cases.
5. The details with * and # mentioned below 1year courses may please be noted too.
6. The Core courses cannot be compensated with additional Elective courses. Also, extra HSS/Languages etc. courses cannot be compensated for technical elective/core courses.

Specialization Module

8-Credit Basic (bridging) Module in Wireless Communication and Computing

B. Tech (IT) under FAP

Coordinator of the Module: Dr. Vijay Kumar Chaurasiya

IIITA Faculties: Prof. Neetesh Purohit, Dr. Manish Kumar, Dr. SuneelYadav, Dr. Bibhash Ghoshal, Dr. Jagpreet Singh, Dr. AnshuAnand.

PART-I (4 Credits)
(L=2, T=1, P=1)
Total Contact Hours (as per 18 wks of semester) = 108 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Wireless Networks: Introduction and Overview of Wireless Networks, IEEE 802.11 (Wireless LANs), IEEE 802.11a/b/g/n/ac, Introduction to 60 GHz Millimeter Wave Gigabit Wireless Networks. Introduction to Vehicular Ah-hoc Networks, Bluetooth and Bluetooth Smart, IEEE 802.15.4 (WPAN), Zigbee. IEEE 802.11 ah. Introduction to Cellular Networks: 1G/2G/3G/4G/5G, GSM Networks, CDMA Networks, LTE. 5G and Beyond Wireless Technologies: Cooperative relaying communications, Large-Scale MIMO systems, Cognitive radio networks, Device-to-Device (D2D) Communications, Wireless energy harvesting, Simultaneous wireless information and power transfer (SWIPT), Ambient backscatter communications (AmBC), Reconfigurable intelligent surface (RIS), Non-orthogonal multiple access (NOMA), Millimeter wave communications, Terahertz (THz) relaying systems, Applications of Machine learning, deep learning and reinforcement learning approaches in 5G and beyond wireless communications.	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	Computer Networks

Texts/References:

1. Wireless Networks by Willium Stallings
2. Mobile Communications by Jochen Schiller
3. Research Papers
4. Online Resources
5. Wiki Pages

PART-II (4 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 144 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Fundamentals of Wireless Communications Baseband and Bandpass digital communication systems. Information theory and error control codes,Physical modeling for wireless channels: free space fixed transmitting and receive antennas, free space moving antenna, reflecting wall fixed antenna, reflecting wall moving antenna, power decay with distance and shadowing, two-ray model, etc., Link budget design using path-loss model, Outdoor and indoor propagation models, Small scale multipath propagation, Delay spread, Coherence bandwidth, Doppler spread & Coherence time, Flat fading, Frequency selective fading, Fast fading, Slow fading.**Hands-on Training** on MATLAB Programming, Learning algorithm implementation in MATLAB for wireless communication systems; Hands-on Training on MATHEMATICA Programming, MATHEMATICA application in wireless communication systems; Hands-on Training on Software Defined Radio; Hands-on Training on NetSim Software.	36 Hrs. Lecture 36 Hrs. Tutorial 36 Hrs. Lab	

Texts/ References:

1. Introduction to MATLAB, manual by MATLAB.
2. Introduction to NetSim, Tutorial and manual by NetSim.
3. Manual on Software Defined Radio
4. B. F. Torrence and E. A. Torrence, "The Student's Introduction to MATHEMATICA; and the Wolfram Language," 3rd Edition, Wolfram.

12+4 Credit Advanced (specialization) Module in Wireless Communication and Computing

B. Tech (IT) under FAP

Coordinator of the Module: Dr. Vijay Kumar Chaurasiya

IIITA Faculties: Prof. Neetesh Purohit, Dr. Manish Kumar, Dr. SuneelYadav, Dr. BibhashGhoshal, Dr. Jagpreet Singh, Dr. AnshuAnand.

PART-I (3 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 72 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
MIMO Communications Introduction to MIMO wireless communications, Analytical MIMO channel models: Uncorrelated, fully correlated, keyhole MIMO fading models, Singular value decomposition of MIMO channels, MIMO capacity, Uniform power allocation, Optimal MIMO power allocation, asymptotic MIMO capacity, Near optimal power allocation, Ergodic capacity and outage probability analysis of MIMO channels over fading channels, Space-time codes, MIMO detector: Linear detector (ZF, MMSE), Non-linear Detector (ML, V-BLAST), MIMO Beamforming, Transmit Antenna Selection, Spatial Modulation.	36 Hrs. Lecture 36 Hrs. Tutorial 36 Hrs. Practical	8-Credit basic(bridging) Module in advanced Wireless Communications and Principle of Wireless Communications
PART-II (2 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 54 Hours		
Embedded Systems and IoT: Embedded, Cyber-Physical Systems and IoT: Introduction, application areas, examples, Common characteristics, Challenges and design flows, Modeling of Embedded and Cyber Physical Systems - Requirements, models of computation, Finite State Machines, Timed Automata,	36 Hrs. Lecture 36 Hrs.	8-Credit basic (bridging) Module in advanced

State Charts, Modeling of Hierarchy; Data flow modeling , Discrete Event Modeling , Continuous and Discrete time system concepts. Design - Choosing the components HW platforms - Processors, Sensors, Actuators; SW stack – RTOS, Scheduling Real Time control tasks, IoT Fundamentals - Devices, Gateway; Elements of IoT - IoT Functional blocks, IoT Communication Modules and API. Basics of Networking, Machine-to-Machine interaction, IoT Communication Protocols MQTT, ZigBee, Bluetooth, CoAP, UDP, TCP. Concept of Cloud Computing: Everything as a Service (XaaS), Role of Cloud; Software Components - Programming API's; IoT Application Development - Solution Framework for IoT. Advanced topics - Data Analytics for IoT, Fault Tolerance in IoT based Systems; IoT Security.	Tutorial 36 Hrs. Practical	Wireless Communications and Principle of Wireless Communications

Texts/References:

1. Peter Mardwel, Embedded System Foundations of Cyber Physical Systems Springer 2nd Edition.
2. E. A. Lee, SanjitSeshia Introduction to Embedded Systems – A Cyber–Physical Systems Approach.
3. Rajeev Alur, Principles of Cyber-Physical Systems.
4. Pethuru Raj and Anupama C. Raman (CRC Press) , The Internet of Things : Enabling Technologies, Platforms and Use Cases.
5. ArshdeepBagha and Vijay Madisetti Internet of Things: A Hands-on Approach.
6. Research articles from Journals and Conference Proceedings.

PART-III (2 Credits)

(L=2, T=1, P=1)

Total Contact Hours (as per 18 wks of semester) = 54 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Cloud and Edge Computing Introduction to Cloud Computing, Recent Trends in Computing Cloud Computing, Evolution of cloud		

computing. Cloud Computing Architecture, Service Management in Cloud Computing Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service(SaaS), Data Management in Cloud Computing, Resource Management in Cloud Computing, Cloud Implementation. Open Source and Commercial Clouds, Cloud Simulator, Research trend in Cloud Computing, Fog Computing, VM Resource Allocation, Management and Monitoring, Introduction to Edge Computing, the Cloud Computing analytics pipeline, Coordination of Cloud Services. Serverless Computing and FaaS Model, Cloud-Fog-Edge enabled Analytics, Cloud Security, Case Studies and Recent approaches.	36 Hrs. Lecture 36 Hrs. Tutorial 36 Hrs. Practical	8-Credit basic (bridging) Module in Wireless Communications

Texts/References:

1. Cloud Computing: Principles and Paradigms, Editors: RajkumarBuyya, James Broberg, Andrzej M. Goscinski, Wiley,2011.
2. Enterprise Cloud Computing - Technology, Architecture, Applications, GautamShroff, Cambridge University Press, 2010.
3. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010.
4. Cloud Security: A Comprehensive Guide to Secure Cloud Computing, Ronald L. Krutz, Russell Dean Vines, Wiley- India, 2010.
5. Cloud Computing: Principles, Systems and Applications, Editors: Nikos Antonopoulos, Lee Gillam, Springer, 2012.

PART-IV (4 Credits)
(L=0, T=0, P=4)
project

Education is the most Powerful Weapon which you can use to change the world.

APJ Abdul Kalam

Recommended Credits in each semester for B.Tech. ECE

Maximum Allowable Credits per Semester: 24

Minimum Allowable Credits per Semester: 10

Semester / Courses	1st	2nd	3rd	4th	5th	6th	7th	8th	Total Cr.
Technical Courses (Core/Electives)	18+2#	18+1#	22	17	13	16$	16$	0	117+3#
Multidisciplinary/HSS Courses (Electives)	2	2	0	2	4	4	0	0	14
Multidisciplinary/Languages/Arts/Community Services/Sports (Electives)	0	0	0	3	0	2	0	4	9
Project (Core)	0	0	0	0	5	1&	2&	12	20
Total Credits	**20+2#**	**20+1#**	**22**	**22**	**22**	**22**	**16**	**16**	**160+3#**

#Orientation Camp I & II Courses will have qualitative grading. This Course will run in Summer & Winter break.

$ The faculty offering these modules may include some project credits too.

& Credits are inclusive and part of 6th & 7th Semester respectively.

Education is not the learning of facts but the training of the mind to think.

Albert Einsten

Curriculum of B. Tech. ECE

Total Accumulative Credit: 40+3 (First Year)

Semester 1			Total Credit: 20+2	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Linear Algebra	Core	4	3–1–0
2.	Physics	Core	4	2–1–1
3.	Introduction to Programming	Core	4	2–1–1
4.	Fundamentals of Electrical & Electronics Engineering	Core	4	2–1–1
5.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	2	1-1-0
6.	Workshop on Computer Hardware and Networking	Core	2	0–1–1
7.	*Orientation Camp-I*(Qualitative Grading)*	Core	*2*	*1-1-0*
Semester 2			**Total Credit: 20+1**	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Electromagnetic Field and Waves	Core	4	3–1–0
2.	Data Structures	Core	4	1–1–2
3.	Digital System Design	Core	4	2–1–1
4.	Electronics Devices and Circuits	Core	4	2–1–1
5.	Electronics Workshop	Core	2	0-0-2
6.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	2	0-1-1
7.	*Orientation Camp-II*(Qualitative Grading)*	Core	1	*0-0-1*

*The Orientation Camp course will have qualitative grading.It is over and above 160 credit requirements of B.Tech Program. The Orientation Camp –I is named as "India's Contribution to Ethics, Values, Science, Technology and Spirituality" and Orientation Camp –II is named as "Life Skills through Community Service".

#The LTP is just indicative the concerned faculty may change it as per his/her teaching plan, after getting consent from Dean (Academic).

Total Accumulative Credit: 84+3(Second Year)

Semester 3			Total Credit: 22	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Micro Processor Interface and Programming	Core	4	2–1–1
2.	Analog Communication	Core	4	2–1–1
3.	Electronics Measurement and Instrumentation	Core	3	2–0–1
4.	Analog Electronics	Core	4	2–1–1
5.	Probability and Statistics	Core	4	3–1–0
6.	Electrical Engineering	Core	3	2-0-1
Semester 4			**Total Credit: 22**	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Operating Systems	Core	3	2–0–1
2.	Integrated Circuit Technology	Core	3	2–1–0
3.	Antenna and Wave Propagation	Core	4	2–1–1
4.	Control Systems	Core	4	2–1–1
5.	Multidisciplinary/HSS Basket	Elective	2	1-1-0
6.	Multidisciplinary/Languages/Arts/Community Services/Sports	Elective	3	1-1-1
7.	Discrete Time Signals and Systems	Core	3	2–1–0

"All of us do not have equal talent. But, all of us have an equal opportunity to develop our talents."

–Dr. A. P. J. Abdul Kalam

Total Accumulative Credit: 128+ 3(Third Year)

Semester 5			Total Credit: 22	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Mini Project (Hardware based)	Core	5	0–1–4
2.	Digital Communication	Core	4	2–1–1
3.	Computer Networks	Core	4	2–1–1
4.	Microwave Engineering	Core	4	2–1–1
5.	SMT Workshop (or equivalent)	Core	1	0-0-1
6.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	4	2-1-1
Semester 6			**Total Credit: 22**	
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	**Any one specialized Basic(bridging) module Module-1: Advanced Wireless Communication Module-2: RF and Microwave Systems Module-3: Signal Processing Module-4: VLSI Design Module-5: Device Fabrication Technology *Later on More modules may be added and some of these may be dropped*	Core	8	4-2-2
2.	Digital Signal Processing	Core	4	2-1-1
3.	Principles of Wireless Communication	Core	4	2-1-1
4.	Course(s) from Humanities and Social Sciences (HSS)specialization	Elective	4	2-1-1
5.	Multidisciplinary/Languages/Arts/Community Services/Sports/Design and Innovation Subjects	Elective	2	0-1-1

**The Faculty member(s) who are offering a Basic(bridging) module may suitably divide 8 credits into multiple curses/lab/workshop/project with customized LTP components as per their teaching plan.

Total Accumulative Credit: 160 + 3(Fourth Year)

Semester 7				Total Credit: 12+4
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	**Any one specialized Advanced(specialization) module Module-1: Advanced Wireless Communication Module-2: RF and Microwave Systems Module-3: Signal Processing Module-4: VLSI Design Module-5: Device Fabrication Technology *Later on More modules may be added and some of these may be dropped*	Core	12	8-2-2
2.	Mini Project	Core	4	0-0-4

Semester 8				Total Credit: 16
Sl.No.	**Course Name**	**Core/Elective**	**Credit**	**#L-T-P**
1.	Multidisciplinary/Languages/Arts/Community Services/Sports/Internship/Design and Innovation Subjects	Elective	4	2-1-1
2.	Major Project (Thesis)	Core	12	0–2–10

NOTES:

1. A few chosen courses from SWAYAM portal, other institutes courses (recognized by IIITA) in ONLINE/ON Campus modes may be allowed for Multidisciplinary/ HSS/Sports/Arts/ Languages/Community services electives baskets.
2. 12-Credits HSS specialization offered by IIITA will be covered during 1st, 2nd, 5th and 6th Semesters in a sequential manner. The student needs to choose one such HSS specialization in the 1st Sem.Independent standalone courses or clubbed courses from multidisciplinary baskets (as approved by IIITA) may be allowed in ONLINE/On-Campus mode.
3. Specialized Basic(bridging)/Advanced(specialization) modules in the field of ECE will be specifically designed and offered so that the students with the aim of giving preliminary knowledge

on M.Tech(ECE) and MTech(IT) programs specializations running at IIITA. A few Basic(bridging)/Advanced(specialization)modules developed by other prestigious institutes may also be offered. The student may choose any one of these Basic (bridging)/Advanced (specialization) modules.

a) Each Basic(bridging)/Advanced(specialization) Module will have several parts.The result of each part will be separately prepared as per the applicable ordinance and should be displayed as follows

Title of the module:

Part-I GPI= xxx

Part-II GPI=xxx

Part-III GPI=xxx

Part-IV GPI=xxx

Part-V GPI=xxx

Part-VI GPI=xxx

b) C1, C2 and C3 for each part of the module should be separately evaluated as per CCLCAA ordinance i.e., after completing the 50% syllabus of the respective PART, the C1 score should be submitted. Later on, the C2 score should be submitted after completion of the 100% syllabus, and then C3 should be conducted as a summative assessment. Therefore, the score submission dates for the C1, C2 & C3 of all the courses of various modules may be different than the other regular subjects.

4. Summer semesters may also be used for early starting or late closing of courses as the need may be. No additional fee (excluding food/stay etc. if applicable) may be charged from students in such cases.
5. The details with * and # mentioned below 1year courses may please be noted too.
6. The Core courses cannot be compensated with additional Elective courses. Also, extra HSS/Languages etc. courses cannot be compensated for technical elective/core courses.

"Education breeds confidence. Confidence breeds hope. Hope breeds peace."

–Confucious

Specialization Module

8-Credit Basic (bridging) Module in Advanced Wireless Communication

B. Tech (ECE)under FAP

Coordinator of the Module : Dr. Suneel Yadav
IIITA Faculties : Prof. Neetesh Purohit, Dr. Radhika Gour, Dr. Rahul H. Meshram, Dr. Rajat K. Singh
Other Institutes Faculty : to be updated soon

Syllabus

PART-I (4 Credits) **(L = 2, T = 1, P = 1)** **Total Contact Hours (as per 18 wks of semester) = 108 Hours**		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Detection and Estimation Theory for Wireless Communications Review of random variables and random process, Bayes Rule, Likelihood ratios, Sufficient statistics, Minimax Rule, Composite Hypothesis Testing, Neyman-Pearson test, Receiver operating characteristics, Maximum likelihood estimation, Maximum a posteriori probability estimation, Minimum mean-square estimation, Linear least square estimation, Cramer Rao lower bound, General Gaussian Problem,Kalman filtering	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	Basic knowledge in the following fields is desired 1. Digital Communications 2. Probability and Statistics 3. Principles of wireless communications
Machine Learning for Wireless Communications Basic ML concepts and examples, Overview of supervised machine learning, unsupervised machine learning, semi-supervised learning; Machine learning for physical layer design, Supervised Learning and its applications in wireless systems, Applications in modulation classification, Adaptive modulation and coding (AMC) mechanisms for wireless systems: classical AMC, using support vector machines, using k-nearest neighbors, using k-means, using reinforcement learning	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	
Texts/References: 1. A. Papoulis, *Probability, Random Variables and Stochastic Processes*, 2nd Ed., McGraw Hill, 1983. 2. H. L. Van Trees, *Detection, Estimation and Modulation Theory (Part I),* John Wiley & Sons, 2001. 3. Fa-L. Luo, *Machine Learning for Future Wireless Communications,* Wiley, 2020. 4. Online Resources		

PART-II (4 Credits) (L = 0, T = 2, P = 2) Total Contact Hours (as per 18 wks of semester) = 144 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Hands-on Training on Wireless Communications Tools Hands-on Training on MATLAB Programming, Learning algorithm implementation in MATLAB for wireless communication systems; Hands-on Training on MATHEMATICA Programming, MATHEMATICA application in wireless communication systems; Hands-on Training on Software Defined Radio; Hands-on Training on NetSim Software	72 Hrs. Tutorial 72 Hrs. Lab	

Texts/ References:

1. Introduction to MATLAB, manual by MATLAB.
2. Introduction to NetSim, Tutorial and manual by NetSim.
3. Manual on Software Defined Radio
4. B. F. Torrence and E. A. Torrence, "The Student's Introduction to MATHEMATICA; and the Wolfram Language," 3rd Edition, Wolfram.

Education is fundamental for achieving full human potential, developing an equitable and just society, and promoting national development.

National Education Policy 2020

12+4 Credit Advanced (specialization) Module in Advanced Wireless Communication

B. Tech (ECE) under FAP

Coordinator of the Module: Dr. Suneel Yadav
IIITA Faculties : Dr. Manish Kumar, Prof. Neetesh Purohit, Dr. Radhika Gour, Dr. Rahul H. Meshram, Dr. Rajat K. Singh, Dr. Venkatesan, Dr. Vijay K. Chaurasiya
Other Institutes Faculty: to be updated soon

Syllabus

PART-I (3 Credits) **(L = 2, T = 1, P = 0)** **Total Contact Hours (as per 18 wks of semester) = 72 Hours**		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
MIMO Communications Introduction to MIMO wireless communications, Analytical MIMO channel models: Uncorrelated, fully correlated, keyhole MIMO fading models, Singular value decomposition of MIMO channels, MIMO capacity, Uniform power allocation, Optimal MIMO power allocation, asymptotic MIMO capacity, Near optimal power allocation, Ergodic capacity and outage probability analysis of MIMO channels over fading channels, Space-time codes, MIMO detector: Linear detector (ZF, MMSE), Non-linear Detector (ML, V-BLAST), MIMO Beamforming, Transmit Antenna Selection, Spatial Modulation	36 Hrs. Lecture 36 Hrs. Tutorial	8-Credit Basic(bridging) Module in Advanced Wireless Communications and Principle of Wireless Communications
PART-II (2 Credits) **(L = 1, T = 1, P = 0)** **Total Contact Hours (as per 18 wks of semester) = 54 Hours**		
5G and Beyond Wireless Technologies Cooperative relaying communications, Large-Scale MIMO systems, Cognitive radio networks, Device-to-Device (D2D) Communications, Wireless energy harvesting, Simultaneous wireless information and powertransfer (SWIPT), Ambient backscatter communications (AmBC), Reconfigurable intelligent surface (RIS), Non-orthogonal multiple access (NOMA), Millimeter wave communications, Terahertz	18 Hrs. Lecture 36 Hrs. Tutorial	8-Credit Basic(bridging) Module in Advanced Wireless Communications and Principle of Wireless Communications

(THz)relaying systems, Applications of Machine learning, deep learning and reinforcement learning approaches in 5G and beyond wireless communications		

Texts/References:

1. D. Tse and P. Viswanath, *Fundamentals of Wireless Communications*, Cambridge Uni. Press, 2005.
2. N. Costa and S. Haykin, *Multiple-input multiple-output channel models,* John Wiley & Sons, 2010.
3. A. Chokhalingam and B. S. Rajan, *Large MIMO systems,* Cambridge University Press, 2014.
4. Research articles and other Online Resources

PART-III (2 Credits)

(L = 1, T = 1, P = 0)

Total Contact Hours (as per 18 wks of semester) = 54 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Security in Wireless Communications Basics of cryptographic systems, symmetric and public key cryptography, Encryption and Decryption techniques, cryptography techniques for certificates, authentication etc., Privacy issues, Attacks and countermeasures Physical layer security (PLS): information-theoretic secrecy, secret communication over noisy channels, secret-key generation from noisy channels, information theoretic models for key generation, PLS performance of wireless communications against eavesdropping and jamming,Cooperative relaying communications for PLS, Overview of other physical layer security approaches: Channel approaches, Code approaches, Power approaches.	18 Hrs. Lecture 36 Hrs. Tutorial	8-Credit Basic(bridging) Module in Wireless Communications

Texts/References:

1. YulongZou, JiaZhu,*Physical-Layer Security for Cooperative Relay Networks*, Springer 2016.
2. W. Stallings, *Cryptography and Network Security: Principles and Practice,* Pearson Education, 7th edition, 2016.
3. Research articles and other Online Resources

PART-IV (3 Credits)
(L = 1, T = 1, P = 1)
Total Contact Hours (as per 18 wks of semester) = 90 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Internet of Things (IoT) Introduction to IoT, IoT Network architecture and communication protocols, The "Things" in IoT: Sensor, actuators and other components, Basis of wireless sensor networks, IP and Non-IP based IoT WPAN, Application protocols for IoT, Tiny OS for IoT, Introduction to IoT data and analytics, Data Acquisition in IoT, IoT Applications: Smart Cities, Smart Transportation, Public Safety	18 Hrs. Lecture 36 Hrs. Tutorial 36 Hrs. Lab	8-Credit Basic(bridging) Module in Wireless Communications

Texts/References:

1. Perry Lea, *Internet of Things for Architects: Architecting IoT solutions by implementing sensors, communication infrastructure, edge computing, analytics, and security*, Packt Publishing.
2. D. Hanes, G. Salgueiro, P. Grossetete, R. Barton, J. Henry, *IoT Fundamentals: Networking Technologies, Protocols, and Use Cases for the Internet of Things,* Cisco Press.
3. Research articles and other Online Resources

PART-V (2 Credits)
(L = 1, T = 1, P = 0)
Total Contact Hours (as per 18 wks of semester) = 54 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Optical Wireless Communications Overview of optical fibre communication, Optical sources (LED, Laser), Photodetectors, Photodetection techniques, Overview of optical wireless communications (OWC), OWC and Radio comparison, Link configuration, Channel modeling: Indoor & Outdoor OWC channels, Modulation techniques, System performance analysis (Indoor and Outdoor), Free space optics (FSO)link performance under the effect of atmospheric turbulence, Visible light communication (VLC)	18 Hrs. Lecture 36 Hrs. Tutorial	8-Credit Basic (bridging) Module in Wireless Communications

Texts/References:

1. G. Keiser, *Optical Fibre Communications*, McGraw Hill, 5th Edition, 2017.
2. Z. Ghassemlooy, W. Popoola, S. Rajbhandari, *Optical Wireless Communications: System and Channel Modelling with MATLAB*, Taylor and Francis, 2012.
3. Research articles and other Online Resources

8-Credit Basic (bridging) Module in VLSI Design

IIITA Faculties : Prof. Manish Goswami, Dr. Prasanna Kumar Misra, Dr. Kavindra Kandpal, Dr. Sunny
Other Institutes Faculty: to be updated soon

B. Tech (ECE) under FAP

Syllabus

PART-I (4 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 108 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Digital IC Design: Introduction to MOSFETs, Brief overview of CMOS technologies, Trends & Projections in VLSI, Flow diagram, Design issues, Impact of scaling on Digital IC design, CMOS process design kit. MOS Inverters, Static Characteristics, Introduction, Resistive-Load Inverters, Inverters with n-Type MOSFET Load, CMOS Inverter. Dynamic characteristics and interconnect effect: Introduction, Delay-Time Definitions, Calculation of Delay-Times, Inverter Design with Delay Constraints, Estimation of Interconnect Parasitic, Calculation of Interconnect Delay, Switching Power Dissipation of CMOS Inverters. Combinational and Sequential Circuits, MOS Logic Circuits with Depletion NMOS Loads, CMOS Logic Circuits, Complex Logic Circuits, CMOS Transmission Gates, Behavior of Bistable Elements, SR Latch Circuits, Clocked Latch and Flip-Flop Circuits, CMOS D-Latch and Edge-Triggered FlipFlop.	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	Basic knowledge in the following fields is desired 1. Digital Electronics 2. Fundamentals to Electrical and Electronics

Texts/References:

1. Uyemura, John P. "Introduction to VLSI circuits and systems." (2002).
2. Rabaey, Jan M., Anantha P. Chandrakasan, and BorivojeNikolic. Digital integrated circuits. Vol. 2. Englewood Cliffs: Prentice hall, 2002.
3. Kang, Sung-Mo, and Yusuf Leblebici. CMOS digital integrated circuits. Tata McGraw-Hill Education, 2003.

PART-II (4 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 144 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Analog Integrated Circuit Design: Introduction, Integrated circuits, Transistor characteristics & models. CS, CG and CD amplifier, Differential amplifier, Current mirror, active loads, Output Stages, Frequency response of CS, CG and CD amplifier. Multistage amplifiers, Frequency Response of amplifiers, feedback techniques, Frequency Response & Stability of Feedback Amplifiers. OPAMP in amplifiers and filters etc, Noise, non-linearity, mismatch, MOS vs Bipolar OPAMP	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	Basic knowledge in the following fields is desired 3. Analog Electronics 4. Fundamentals to Electrical and Electronics
Texts/ References: 1. Gray, Paul R., and Robert G. Meyer. Analysis and design of analog integrated circuits. John Wiley & Sons, Inc., 1990. 2. Razavi, Behzad. Design of analog CMOS integrated circuits. 2005.		

Education Policy lays particular emphasis on the development of the creative potential of each individual.

National Education Policy 2020

12+4 Credit Advanced (specialization) Module in VLSI Design

IIITA Faculties: Prof. Manish Goswami, Dr. Prasanna Kumar Misra, Dr. Kavindra Kandpal, Dr. Sunny

Other Institutes Faculty: to be updated soon

B. Tech (ECE) under FAP

Syllabus

PART-I (4 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 72 Hours		
Topics for Coverage	**Contact Hours**	**Pre-Requisite**
Semiconductor Memory: Memory Hierarchy and types, SRAM cell design and optimization, Decoders to Sense Amplifiers and associated timing circuits, DRAM array design and related constraints, address decoding, pipelining, data interface, Charge Pumps, Main memory design: Flash memory NAND and NOR Flash memory, Non-Volatile Spintronics Memory Cell: Basic principle and operation, Reliability, Testability. Ref Books: 1. J. Singh, S. P. Mohanty, and D. K. Pradhan, Robust SRAM designs and analysis. 2. R. Jacob Baker - CMOS Circuit Design, Layout, and Simulation.	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	Basic knowledge in the following fields is desired 5. Digital Electronics 6. Fundamentals to Electrical and Electronics
PART-II (4 Credits) (L=2, T=1, P=1) Total Contact Hours (as per 18 wks of semester) = 54 Hours		
VLSI Testing and Verification: **VLSI Design:** High level Synthesis, Verilog RTL Design, Combinational and Sequential Synthesis Logic Synthesis (for large circuits). **Verification Techniques:** Introduction to Hardware Verification and methodologies, Binary Decision Diagrams(BDDs) and algorithms over BDDs, Combinational equivalence checking, Temporal Logics, Modeling sequential	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	

systems and model checking, Symbolic model checking. **VLSI Testing:** Introduction, Fault models, Fault Simulation, Test generation for combinational circuits, Test generation algorithms for sequential circuits and Built in Self test.		

Texts/References:

1. Bushnell, Michael, and Vishwani D. Agrawal. Essentials of electronic testing for digital, memory and mixed-signal VLSI circuits. Vol. 17. Springer Science & Business Media, 2000.

PART-III (4 Credits)
(L=2, T=1, P=1)
Total Contact Hours (as per 18 wks of semester) = 54 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Mixed Signal IC Design: Review of Current and Voltage Sources, Current Mirrors, Voltage References and CMOS op-amps, Noise in MOS Circuits, Introduction to Data Conversion Circuits, Data Conversion Circuits, Basic Requirements, Different A/D and D/A circuits, design & working, Clock Generation for Mixed Signal System ICs , PLL, SC circuits	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	8-Credit Basic(bridging) Module in VLSI Design

Texts/References:

1. Allen and Holberg - CMOS *Analog Circuit Design*.

PART-IV (4 Credits)
(L=2, T=1, P=1)
Total Contact Hours (as per 18 wks of semester) = 90 Hours

Topics for Coverage	Contact Hours	Pre-Requisite
Radio Frequency Integrated Circuit Design: CMOS and BiCMOS Technology, RF systems (Transmitter and Receiver Architecture), Basic radio architectures, Process design kit, Passive and active components, Thermal Noise and Flicker Noise, Noise figure. High frequency amplifiers, Low noise amplifiers, Power Amplifiers, Up conversion and down conversion mixer design, PLL, Voltage controlled oscillator, Phase detector, charge pump, phase lock loop. High speed OPAMP, OTA, negative feedback, active inductor, first order and second order low pass, high pass, band pass and band reject filter design.	18 Hrs. Lecture 18 Hrs. Tutorial 18 Hrs. Lab	8-Credit Basic(bridging) Module in VLSI Design

Texts/References:

1. Lee, Thomas H. The design of CMOS radio-frequency integrated circuits. Cambridge university press, 2004.

2. Razavi, Behzad, and RazaviBehzad. RF microelectronics. Vol. 1. New Jersey: Prentice Hall, 1998.

PART-VI (4 Credits)

Project (0-0-4)

"A nation's culture resides in the hearts and in the soul of its people."

–Mahatma Gandhi

Humanities and Social Sciences (HSS) Courses

(12 Credit distributed module running in 1,2,5, and 6 semesters in Online/Hybrid Mode)

(A) Courses Offered by IIITA, Prayagraj

Basket	Semester 1 (2 Cr.)	Semester 2 (2 Cr.)	Semester 3	Semester 4	Semester 5 (4 Cr.)	Semester 6 (4 Cr.)	Semester 8 (4 Cr.)
Human Resource Management	OB (1-1-0)	HRM (1-1-0)	2 credit Multidisciplinary OR HSS independent course (which is not a part of the HSS module) may be opted by IT stream students **(Coordinator Dr. Shailendra Kumar)**	3 credit Multidisciplinary. OR HSS independent course (which is not a part of the HSS module) may be opted by ECE stream students **(Coordinator Dr. Shailendra Kumar)**	EI&L (1-1-0); EBB (1-1-0)	SHRM (1-1-0); T&D (1-1-0)	4 credit Multidisciplinary OR HSS OR Language etc. independent course (which is not a part of the HSS module) may be opted by students in ONLINE mode **(Coordinator Dr. Shailendra Kumar)**
Operation Management	BS (1-1-0)	P&OM (1-1-0)			SCM (1-1-0); PM (1-1-0)	SS&LM (1-1-0); SOM (1-1-0)	
Finance	FS&A (1-1-0)	CF (1-1-0)			FD&RM (1-1-0); SA&PM (1-1-0)	IFM (1-1-0); MB&FI (1-1-0)	
Marketing	MTE (1-1-0)	MM (1-1-0)			CB (1-1-0); DM (1-1-0)	RO&M (1-1-0); BM&KAM (1-1-0)	
General Management	POM (1-1-0)	POE (1-1-0)			ITF (1-1-0); ITM (1-1-0)	IBM (3-1-0)	

Please note: The full form of the subjects are given below:

1. Human Resource Management (HRM)
2. Organizational Behavior (OB)
3. Human Resource Management (HRM)
4. Emotional Intelligence and Leadership (EI&L)
5. Employer Brand Building (EBB)
6. Strategic HRM (SHRM)
7. Training and Development (T&D)
8. Operation Management (OM)
9. Business Statistics (BS)
10. Production and Operations Management(P&OM)
11. Supply Chain Management (SCM)
12. Project Management (PM)
13. Strategic Sourcing and Logistics Management (SS&LM)
14. Service Operations Management (SOM)
15. Finance (F)
16. Financial Statements and Analysis (FS&A)
17. Corporate Finance (CF)
18. Financial Derivatives and Risk Management (FD&RM)
19. Security Analysis and Portfolio Management (SA&PM)
20. International Financial Management (IFM)
21. Management of Banking and Financial Institutions (MBFI)
22. Marketing (M)
23. Management Thought & Environment (MT&E)
24. Marketing Management (MM)
25. Consumer Behavior (CB)
26. Digital Marketing (DM)
27. Retail Operations and Management (RO&M)
28. Business Marketing and Key Account Management (BM&KAM)
29. General Management (GM)
30. Principles of Management (POM)
31. Principle of Economics (POE)
32. Introduction to Finance (ITF)
33. Introduction to Marketing (ITM)
34. International Business Management (IBM)

(B) Courses Offered by DSVS*, Haridwar

Module	Sem 1	Sem 2	Sem 5	Sem 6
Yoga	Foundations of Yoga 2 Credits (L-T-P:1-0-1)	प्रज्ञायोगसाधना एवं सिद्धांत 2 Credits (L-T-P:1-0-1)	Hath Yoga & Patanjal Yoga 4 Credits (L-T-P:3-0-1)	Health and Yogic Management of Common Ailments 4 Credits (L-T-P:3-0-1)

Independent standalone elective courses offered

Sem 3	Sem 4	Sem 8
Applied Naturopathy 2 Credits (L-T-P:1-0-1)	Sujok Acupressure Technique 2 Credits (L-T-P:1-0-1)	Dietetics, Yoga and Mental Health 4 Credits (L-T-P:3-0-1)

Department of Life Management -

12-Credits HSS specialization offered by Dev SanskritiVishwavidyalaya, Haridwar

Module	Sem 1	Sem 2	Sem 5	Sem 6
Life Management	Life Style Management 2 Credits (L-T-P:1-0-1)	Study Management 2 Credits (L-T-P:1-0-1)	Successful Personality 4 Credits (L-T-P:3-0-1)	Character Building 4 Credits (L-T-P:3-0-1)

Department of Life Management -

Independent standalone elective courses offered by Dev Sanskriti Vishwavidyalaya, Haridwar

Module	Sem 3	Sem 4
Life Management	Personality Grooming 2 Credits (L-T-P:1-0-1)	Self-excellence 2 Credits (L-T-P:1-0-1)

*Dev Sanskriti Vishwavidyalaya(University) was established in the year 2002 based on an act (22.01.2002) passed by the state legislature of Uttarakhand and is notified in the gazette vide notification no. (123/vidhayi & sansadiya karya/2002 dated 11.04.2002). The university is duly recognized by the University Grants Commission, accredited by NAAC, and ISO 14001:2015 certified. It is privately sponsored by Shri Vedmata Gayatri Trust, Shantikunj, a renowned socio-spiritual organization (http://www.awgp.org/). It is established to inculcate the virtues of patriotism and social service in its students through its state of the art unique curriculum.

(C) HSS Module/courses Offered by * GBPSSI, Prayagraj

1. **Leadership for Social Change (4 credits; L-T-P : 3-1-0)**
2. **Understanding Indian Society (2 credits; L-T-P : 2-0-0)**
3. **Economy and Development (4 credits; L-T-P : 3-1-0)**
4. **Approaches and Institutions : Understanding Social Reality through Indian Eyes (2 credits; L-T-P : 2-0-0)**

*The Govind Ballabh Pant Social Science Institute (GBPSSI) is a leading research and teaching Institute in the Social Sciences and Developmental studies in India. Since its inception in the year 1980 it has relentlessly strived to excel in the field of research and education focusing on its canvass of social sciences and related issues.

(D) Language Courses Offered

1. **Course Name: Language Skills- Sanskrit**
   LTP Structure of the course: (04 Credits, L-T-P: 2-1-1)

2. **Course Name: Language Skills- Assamese**
   LTP Structure of the course: (04 Credits, L-T-P: 2-1-1)

3. **Name of the Course: Language skills-English**
   LTP Structure of the course (04 Credits, L-T-P: 2-1-1)

4. **Name of the Course: German Language**
   LTP Structure of the course (04 Credits, L-T-P: 2-1-1)

5. **Name of the Course: French Language**
   LTP Structure of the course (04 Credits, L-T-P: 2-1-1)

Fee Structure

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY ALLAHABAD

4 Year Provisional Fee Structure for Academic Year: July2022 to Jan 2026

Course: B.Tech (IT/ECE) **Categories :Gen/OBC/EWS**

Under FAP Framework

Academic Session		Jul-Dec 22	Jan-Jun 23	Jul-Dec 23	Jan-Jun 24	Jul-Dec 24	Jan-Jun 25	Jul-Dec 25	Jan-Jun 26
S. No.	General Fees & Dues (All Figures in ₹)	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem	7th Sem	8th Sem
A	**One Time Fee**								
1	Admission Fee	3030							
2	Enrolment Fee	1210							
3	Identity Card Fee	1210							
4	Alumni Fund	9680							
5	Training & Placement	2000							
6	Caution Money (Refundable)	4000							
	Subtotal (A)	**21130**							
B	**Annual Dues**								
1	Benevolent Fund	610		680		750		830	
2	Group Insurance and Student Welfare Fund	1210		1340		1480		1630	
3	Library Fee	1210		1340		1480		1630	
	Subtotal (B)	**3030**		**3360**		**3710**		**4090**	
C	**Semester Fees**								
1	Tuition Fee *	**66000**	**66000**	**73000**	**73000**	**81000**	**81000**	**90000**	**90000**
2	Gymkhana Fee	1210	1210	1340	1340	1480	1480	1630	1630
3	Examination Fee	1210	1210	1340	1340	1480	1480	1630	1630
4	Grade Card Fee	610	610	680	680	750	750	830	830
5	Medical Fee	610	610	680	680	750	750	830	830
6	Transport	330	330	370	370	410	410	460	460
7	ICT Fee	1500	1500	1650	1650	1820	1820	2010	2010
	Subtotal (C)	**71470**	**71470**	**79060**	**79060**	**87690**	**87690**	**97390**	**97390**
D	**Hostel Fees**								
1	Room Charges: *Double Occupancy-1st & 2nd Year & Single Occupancy-3rd & 4th Year*	**6600**	**6600**	**7260**	**7260**	**15980**	**15980**	**17580**	**17580**
2	Maintenance Charges @ 10% of Room Charges	660	660	730	730	1600	1600	1760	1760
3	Mess Establishment Charges @ 5% of Room Charges	330	330	370	370	800	800	880	880
4	Water Charges @ 10% of Room Charges	660	660	730	730	1600	1600	1760	1760
5	Hostel Electricity Charges: *Double Occupancy-₹1000/- & Single Occupancy-₹2000/-*	1000	1000	1100	1100	2420	2420	2670	2670
6	Cooler Usage Charges	550	550	610	610	680	680	750	750
	Subtotal (D)	**9800**	**9800**	**10800**	**10800**	**23080**	**23080**	**25400**	**25400**
	Total Fee [A+B+C+D] (₹)	**105430**	**81270**	**93220**	**89860**	**114480**	**110770**	**126880**	**122790**
E	**Mess Charges (As per actual)**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**
	Grand Total [A+B+C+D+E]	**128848**	**104688**	**116638**	**113278**	**137898**	**134188**	**150298**	**146208**

* Tuition fee is required to be paid by all FAP students at semester registration time (like other students). However, it is decided that for Flexible Academic Program (FAP) students, the tuition fee may be charged on per credit basis. As per proposed modified fee structure this will be @ Rs 3000/- per credit (upto 24 credit course per semester) for the students opting FAP for the Academic Year 2022-23. Further, this per credit tuition fee will be increased @ 10% per annum from the Academic year 2023-24 onwards. So the adjustment of fee will be done at the time of exit from the institute.

Fee Structure

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY ALLAHABAD									
4 Year Provisional Fee Structure for Academic Year: July2022 to Jan 2026									
Course: B.Tech (IT/ECE)									Categories :SC/ST/PwD
Under FAP Framework									
Academic Session		Jul-Dec 22	Jan-Jun 23	Jul-Dec 23	Jan-Jun 24	Jul-Dec 24	Jan-Jun 25	Jul-Dec 25	Jan-Jun 26
S No	General Fees & Dues (All Figures in ₹)	1st Sem	2nd Sem	3rd Sem	4th Sem	5th Sem	6th Sem	7th Sem	8th Sem
A	**One Time Fee**								
1	Admission Fee	3030							
2	Enrolment Fee	1210							
3	Identity Card Fee	1210							
4	Alumni Fund	9680							
5	Training & Placement	2000							
6	Caution Money (Refundable)	4000							
	Subtotal (A)	**21130**							
B	**Annual Dues**								
1	Benevolent Fund	610		680		750		830	
2	Group Insurance and Student Welfare Fund	1210		1340		1480		1630	
3	Library Fee	1210		1340		1480		1630	
	Subtotal (B)	**3030**		**3360**		**3710**		**4090**	
C	**Semester Fees**								
1	**Tuition Fee* [No Tuition Fee is payable by the UG Students of SC/ST/PwD category]**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**
2	Gymkhana Fee	1210	1210	1340	1340	1480	1480	1630	1630
3	Examination Fee	1210	1210	1340	1340	1480	1480	1630	1630
4	Grade Card Fee	610	610	680	680	750	750	830	830
5	Medical Fee	610	610	680	680	750	750	830	830
6	Transport	330	330	370	370	410	410	460	460
7	ICT Fee	1500	1500	1650	1650	1820	1820	2010	2010
	Subtotal (C)	**5470**	**5470**	**6060**	**6060**	**6690**	**6690**	**7390**	**7390**
D	**Hostel Fees**								
1	Room Charges: *Double Occupancy-1st & 2nd Year & Single Occupancy-3rd & 4th Year*	**6600**	**6600**	**7260**	**7260**	**15980**	**15980**	**17580**	**17580**
2	Maintenance Charges @ 10% of Room Charges	660	660	730	730	1600	1600	1760	1760
3	Mess Establishment Charges @ 5% of Room Charges	330	330	370	370	800	800	880	880
4	Water Charges @ 10% of Room Charges	660	660	730	730	1600	1600	1760	1760
5	Hostel Electricity Charges: *Double Occupancy-₹1000/- & Single Occupancy-₹2000/-*	1000	1000	1100	1100	2420	2420	2670	2670
6	Cooler Usage Charges	550	550	610	610	680	680	750	750
	Subtotal (D)	**9800**	**9800**	**10800**	**10800**	**23080**	**23080**	**25400**	**25400**
	Total Fee [A+B+C+D] (₹)	**39430**	**15270**	**20220**	**16860**	**33480**	**29770**	**36880**	**32790**
E	**Mess Charges (As per actual)**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**	**23418**
	Grand Total [A+B+C+D+E]	**62848**	**38688**	**43638**	**40278**	**56898**	**53188**	**60298**	**56208**

Software Support System for FAP

The IIIC has involved few Industry partners to design FAPIS such that most of the services should be offered through Desktop as well as Mobile interfaces. The main users of the FAPIS backbone platform along with their roles and responsibilities are as defined below:

(A) FAP-Query Response System(FAP-QRS)

The scope of Flexible Academic Program Query Response System (FAP-QRS) is as follows:

a) Creating and maintaining a website

b) Query Collection by text over website/whatsapp/sms etc. and giving suitable auto response (24x7 service availability)

c) Query Collection by voice calls and giving suitable response by an executive (Service availability should be during 10AM to 6 PM on working days)

(B) FAPIS Basic Service

The 'Basic Services' includes modules like student specific information collection and storage, student/faculty/institute/consortium registration, course registration, class time table, students movement management, examination support system, project records keeping, etc.

i. FAP Students

a) After getting admission in FAP in any discipline in any affiliated college/institute of any consortium, each student needs to enroll himself in FAPIS.

b) The student can select courses of choice

c) After selecting maximum allowable courses, s/he needs to pay the fee for these courses and other applicable fees of his/her parent institute via ONLINE mode

d) The continuous assessment approach will be followed and the student will be able to see the marks awarded to him/her as soon as it is uploaded after each assessment. Also, after completion of the course the final marks/grades of each subject, the updated transcript, accumulated credits, and other details like fee paid, etc. will remain visible to him/her. A dashboard will be created for the student where he/she can get details of all academic activities. The student will be able to see his/her registered/completed/failed /incomplete courses, marks, SGPA/CGPA, degree requirements, completed and remaining requirements, number of credits he/she can take in parent/other institutes. fee details, fellowship/stipend details and other similar information as needed. Additionally, students can request for generation of transcripts, marksheets, etc through this dashboard.

(ii) FAP Main teachers

a) Any teacher of the participating Institutes, the Institutes of National Importance (INI) or other similarly placed institutes as may be chosen by the IIITA may become Main Teacher. He will choose the course which he wants to offer and specify the maximum number of on-campus (Physical mode) and ONLINE students whom he would like to teach, the fee for the offered course, the language of instructions, etc. relevant details.

b) He needs to choose the slot from the available slots for conducting lectures, tutorials and practice sessions (as per the assigned credits to the course e.g. if a course has LTP 1:1:1 then the teacher needs to choose 1 hour lecture, 2 hour tutorial and 2 hour practical slot). It may be on a 'first come first serve' basis during 8 AM to 8 PM on weekdays. The HSS subjects may however be allowed on weekends too.

c) He MUST enter all the aforementioned information after obtaining consent of the FAP coordinator (or any other competent official) of IIITA.

d) As per the frozen timetable he/she needs to conduct the course with the help of supporting teachers, undertake continuous assessments and keep uploading marks of all enrolled students on FAPIS after each assessment session and the final result of each student.

e) A dashboard will be created for the teacher where he/she can find his current and past courses. He/she can fill marks of every student through this dashboard. He/she will be able to see other details such as courses taught, remunerations, colleges, students and any other similar information as needed.

f) A few teachers may be there in more than one consortium e.g. the teachers of institutes of national importance.

iii. FAP Supporting Teachers

a) The main teacher may choose his colleagues or M.Tech/PhD students of any institute as a supporting teacher. Particularly, the subject teachers of the parent colleges/ institutes of those students should be involved, who have joined the course in ONLINE mode. The list of such teachers with contact details will remain available on the main teacher's dashboard.

b) They need to follow the instructions of the main teacher in toto.

(C) Local Academic Bank of Credits (ABC)

Highly Secured services like maintaining Academic Bank of Credits over block chain, On demand transcript generation via mobile using metadata, Digilocker interface etc. will be made available.

Note: Soon, all the above services will be available at the following link along with detailed set of instruction.

https://fapis.in/

Message from FAPIS Consultant

INTELLECTUAL PROPERTY INDIA
PATENTS | DESIGNS | TRADE MARKS
GEOGRAPHICAL INDICATIONS

Prof. Unnat P Pandit

Controller General of Patents,
Designs and Trademarks, Mumbai

The National Education Policy 2020 offers us an opportunity to explore a Flexible Academic Program (FAP) for graduation to doctoral research level offering flexibility in multi institutional, multi-entry and lateral entry, multi-ext multi-disciplinary, multi mode, and multi-lingual features. ITA Prayagraj will host a two-day conference from December 3 wherein an academician, and intellectual community will brainstorm on FAP. It is most unfortunate for me that I am unable to attend. However, am sharing my thoughts on the same, which may help define the strategy for what? Why? And How? Offerings for FAP

- A concrete strategy will be required to realise the fruits of NEP 2020 to recognise the academic, administrative, and financial rules for FAP, which shall be piloted over the next four years, forming the consortium of institutions and universities (initially for technical education), learnt that the IIITA will set up a non-profit section 8 company by the academic year 2022 to implement the FAP. This company shall facilitate a consortium among different Indian and foreign institutes to participate and collectively strengthen the FAP initiative. Accordingly, this consortium will consist of a premier institution that wit provide technical education from graduate to doctoral levels. There are various silent features of FAP wherein few are highlighted below:

- The input and execution process largely determines the quality of a FAP initiative's output. The quality of faculty employed by the university is a significant source of input. The course offerings shall encourage the recognition of faculty affiliated to their institution and being recognised among the consortium institutions to allow enrolling students of other institutions. Such optional teaching among the teaching force shall be hand-picked by students to enrol for their course to learn from their experiences, ideas and expertise.

- The upcoming consortium shall require all member institutions to send their student entry standards to harmonise their next level admission and registration process every year, including the subjects the student has studied in their institutions. The students fulfil the minimum subject requirements for the programs they offer. The education system needs an improvement in the quality of teaching, learning, and assessment process the FAP shall offer, bringing such standardisation. The consortium shall help the institutions achieve the same and collectively handhold each other to improve their academic and administrative merits.

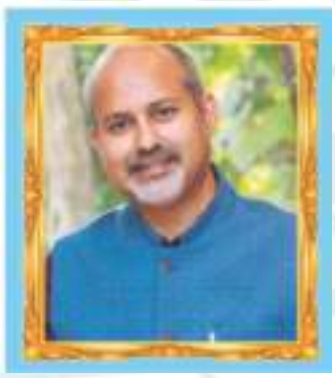
- Covid era offers us a novel academic design that improves our online learning environments and provides new possibilities for various subjects that can be explored virtual/online or through MOOCs over Swayam To teach us how technology can offer students a different teaching experience and measure student learning to provide a rich, multi-media, online experience for off-campus education. Student experience based on more flexible learning options according to their choice among the broader range of options will require an initial handholding to explore the selection for students and consortium institutions An initial framework for selecting choice-based courses and institutions for non-technical teaching experience shall begin the collaboration to standardise the FAP in its operations.

- It is high time to explore the effective utilisation of institutional infrastructure and academic resources The consortium of the institution shall also offer optimum use of the resources and facilities. The Role of such an establishment will be rapid and optimised. Under this pull, the up-gradation of such an establishment may be quick The institution shall leverage the benefits of FAP and NEP, offering improved resources for research.

In establishing the academic expertise for knowledge sharing through the exchange of academic resources across multi-institutional, multi-disciplinary features of FAP, the consortium shall facilitate the collaboration for a joint research guideship and establish a foundation for collaborative research to fulfil domestic needs.

Its time for all of us to explore realising the motive of वसुधैव कुटुम्बकम् to explore realising 'आ नो भद्राः क्रतवो यन्तु विश्वतोऽदब्धासो अपरितासउद्भिदः। देवा नो यथा सदमिद् वृधे असन्नप्रायुवो रक्षितारो दिवे दिवे।। in reference to FAP. this may empower auspicious thoughts to each atom (here all ecosystem enabling elements) coming in touch from every side, never deceived, unhindered, and victorious. That the soul energy of thoughts and commitment to deliver shall strengthen the blessings of Gods ever may be with us for our gain, our guardians day by day unceasing in their care for such novel thought.

Professor Unnat P Pandit (office@unnatpandit.com) is a faculty at Jawaharlal Nehru University and teaches intellectual property, innovation and entrepreneurship. He is also actively engaged in Medicinal Chemistry research which makes it multidisciplinary. Prof Pandit served as Program Director of Atal Innovation Mission, NITI Aayog and served for over 20 Yrs with rich experience in corporate, academic and governance.



Prof. Sandeep Shukla

IIT Kanpur

The NEP2020 in para 27.2 states that, 'careful analysis and review of the linkages between multiple parallel implementation steps will be necessary in order to ensure effective dovetailing of all initiatives. This will also include early investment in some of the specific actions that will be imperative to ensuring a strong base and a smooth progression for all subsequent programmes and actions.' The IIITA's initiative, Flexible Academic Program, seems to be perfectly aligned with these clearly defined implementation guidelines. Particularly. the development of FAP Integrated Service platform (FAPIS) wherein a academic bank of credits will also be created along with many modern features of digital age education system. I will be happy to extend all possible support to IIITA Prayagraj in making the FAP a success.

Prof. P. Nagabhushan

Former Director, IIITA, Prayagraj

From the perspective of bringing healthy changes in academic practices, the National Education Policy 2020. (NEP-2020) provides a lot of scope. The concepts such as liberating the learners from high stake examinations, ensuring that the candidates remain learners and continue to remain lifelong learners, encouraging the learners to make their own academic pursuit, follow a flexible academic passage with re entries allowing the learners to lay their hands on incubation, startup, research, development and such related activities enroute the study period, enrolling for research studies leading to PhD after 4 years of college studies, are all far beyond the conservative and conventional academic patterns being followed. The ideas are revolutionary, the realization has to be evolutionary however not slowly but steadily with a quick pace.

The opportunity for in-between exits and then for re-entries, the monitoring of academic progression through ABC (Academic Bank of Credits) create a very favourable learning ambiance in the country, which surely enhances the academic standard and elevates the GQI-Gross Qualification Index of the nation.

A framework to realize ABC is the model of Flexible Academic Program (FAP) as conceived in this document and as dealt in the 1st National Conference on Flexible Academic Program (FAP) 2021. The essential ingredient of FAP is Caring and Sharing-Caring for the next generation, jointly by the institutions of higher education, sharing their diverse resources and capabilities to produce versatile choice to the learning generation.

The keyword is to provide flexibility- flexibility in the pace of learning, flexibility in choosing the courses, flexibility in choosing the institutions and if possible flexibilities in learning methodologies-All for holistic, experiential learning. The right proposal is to address the issues at different levels

1. Level 1 : Within the institution.

   (An institution for this purpose has got to be autonomous)

   Institutions of National Importance, Stand-alone universities such as Central Universities. Private Universities, Constituent-Autonomous institutions should be able to exercise autonomy and execute the flexibilities at intra-institution level.

2. Level 2 : Flexibility across 2-3 institutions, jointly through suitable MoUs A MoU between/amongst a close group of 2-3 institutions can enable flexibility through a properly designed credit-transfer scheme. This operates at inter-institutional level.

Prof. Ajay Kumar Sharma

Director, NIT Delhi

It is a great pleasure to witness the launching of FAP framework by IIITA Prayagraj towards NEP 2020 realization. The idea of creating a backbone software which can provide services to all institutes/universities which will offer FAP is particularly applauded. I am also extending full support to this initiative as a consultant.

The FAP framework can be easily customized as per the priorities and needs of individual institutes, still it can allow larger collaboration among institutes, and hence, ensure high quality education.

I again congratulate IIITA for taking up this much needed initiative.

Prof. Badri Narayan Tiwari

Director, GBPSSI, Prayagraj

FAP फ्लेक्सिबल एकेडमिक प्रोग्राम जो ट्रिपलआईटी इलाहाबाद ने प्रस्तावित किया है, वो बहुत ही रचनात्मक, creative किस्म का एकेडमिक प्रोग्राम है और जिसमें ट्रिपल आईटी-ए अपने साथ देश के 11 बड़े संस्थानों को जोड़कर उनके साथ इस interdisciplinary कोर्स को NEP-2020 के तहत प्रस्तावित किया गया है, उसको आगे बढ़ा रही है। गोविन्द बल्लभ पंत समाज विज्ञान संस्थान, जो समाज विज्ञान का एक प्रीमियर रिसर्च इंस्टिट्यूट है, उसको भी इस कोर्स में जोड़ा गया है, जिसमें समाज विज्ञान के जो कोर्सेज है, वो हमारा संस्थान FAP के स्टूडेंट्स को देगा और ये एक बहुत ही अच्छी शुरुआत है और संस्थान इसमें बहुत ही तन-मन के साथ शामिल हो रहा है। ट्रिपलआईटी-ए इसको बहुत ही तपहवतवनेसल विकसित कर रही है, और इस पर जो brainstorming हुए. इस पर जो विचार विमर्श हुए बहुत ही उपयोगी होंगे। साथ ही हमारा कहना है कि इससे छात्रों में एक ऐकडेमिक फ्लेक्सिबिलिटी विकसित होगी, रचनात्मकता आएगी, टेक्नोलॉजी के जो स्टूडेंट हैं, उनको जीवन और समाज को समझने में मदद मिलेंगी। मुझे इस FAP प्रोग्राम में शामिल होकर, गोविंद बल्लभ पंत संस्थान को बहुत खुशी है और हम सब इस में मिलकर काम करेगें ।

Views of Eminent Dignitaries

on

Flexible Academic Program

Prof. M. Vidyasagar FRS

SERB-National Science Chair and
Distinguished Professor IIT Hyderabad

The Flexible Academic Program (FAP) being offered for the first time by IIITA, Prayagraj, is an excellent initiative. To my mind, the most noteworthy feature of the FAP is the possibility of multiple exit points, coupled to the number of credits completed, and not necessarily linked to the calendar months spent in the program. Acknowledging that different students have different learning needs, as well as different constraints, is one of the foundational philosophies of the FAP. It is very laudable that the FAP acknowledges this aspect. One hope that, based on the experience gained by IIITA other institutions would also adopt a similar approach.

In this connection, would like to mention that right from its inception, the Indian Institute of Technology Hyderabad (ITH) pioneered an initiative called 'fractal academics. In this approach, courses could be offered for one, two, or three credits. Also, the starting time of a course with fewer than three credits need not coincide with the start of an academic semester. This flexibility was much appreciated by students and faculty alike. When the COVID-19 pandemic hit, the schedules of all academic institutions were badly thrown out of synchrony. IITH could perhaps cope better than other institutions, due to its adoption of fractal academics.

Another very desirable feature of the FAP is the possibility of multi-institute learning experience. Especially at the post-graduate level, it is often the case that the number of students at any one institution is insufficient to mount a course on a specialized topic. However, if students from multiple institutions could be 'pooled,' then the enrollment would be sufficient to have a viable course. The pandemic forced all academic institutions to innovate on distance delivery of classes. While in-person classes have resumed. judicious combinations of in-person and on-line education has the potential to permit aspiring students to take courses that are offered at other institutions. In addition, exchange programs, whereby post-graduate students spend periods of one semester or so at another institution, would broaden the horizons of the students, and lead to better outcomes.

All in all, FAP offered by IIITA is a wonderful initiative that could become a trend-setter for other academic institutions. wish the institute and its organizers all success.

Prof. U.B. Desai

Founding Director, IIT Hyderabad

Abstract of the speech delivered during 1st National Conference

First of all, I like to thank the Director of IIIT-Allahabad, the whole team out there, for giving me this opportunity. Also like to compliment, congratulate the Director at IIIT- Allahabad, and the whole team for conducting this particular workshop. I think this is a very important issue in the current academic scenario that is, how do we incorporate flexibility? Flexibilities can be incorporated at multiple levels for example flexibilities could be within the department, within the institute, across in like minded institutes, across countries, across universities and institutes within India and across countries also. So think one has to look at this flexibility that NEP 2020 talks about in a more holistic manner and one has to also at times you know it may not be a bad idea just thinking about it after the deliberation that we had a little an hour ago, maybe there should be some workshops also with students. It need not necessarily be top-down thing with the professors think that this is how it has to be done and that's just end of the story after all at the centre of all this discussion it is the student. So maybe, in a student themselves, I would say should take up this issue and you know, perhaps deliberations among them like what this workshop has done is brought faculty members, professors from across the country on the same platform to talk about the very important issue of flexible academic program. My feeling is students at various institutes also should take it up. As part of the Gymkhana activity, club activity, I mean that I leave it up to individual institution because we need their inputs too. And I think today's students are far more aware of what is happening across the globe, what is happening within the country, and think there inputs will be quite valuable in shaping proposal or shaping some kind of recommendations on how do we go about implementing Flexible Academic Programs. Also, various academic institutions have done it within their institutions. We should also explorer those things, and I can talk a lot more about this is not the right time. Maybe I did another time! I'm allowed to, you know, the kind of flexibility that I brought in at IIT Hyderabad, your Director talked about incorporating music, fine arts, we literally had a program on creative arts. We people got credits for music people got credit for painting etc, etc. and we found a very unique way of implementing it and there are many other things one can talk about. We implemented IIT Hyderabad Program called Fractal Academics which essentially gives tremendous freedom both to faculty and to the students on how one can they go it. Okay, of course, these have to be now cut across. This was within one institute, we need to go across institutes also. But all these things have to be thought out with partnership among faculty members across institutes and universities and students too. So, with this few words, once again, congratulate IIIT Allahabad for taking this initiative. know it's a lot of work. You put a lot of effort in preparing initial drafts okay, we may have disagreed with some of the things in the draft. Please do excuse me okay. But as one of your members mentioned that they were looking for inputs which were not necessarily you know exactly. but most talked about in their reports. So and think some other report will come out after the deliberations and I indeed look forward to those reports and document based on the deliberations in this workshop.

Prof. V. K. Tewari
Director, IIT Kharagpur

Abstract of the speech delivered during 1st National Conference

While thanking the organizers for giving me this opportunity, I would like to say that in fact there is nothing called non-technical. This is nothing but human engineering and social sciences. See the whole body of the man has engineering parts. Otherwise how your blood is being pumped so you cannot consider that the relationship that we are talking with one person to another person, the gestures that we are making at the feelings that we have, these are all connected and in no less than the wireless and telepathy that you are talking of and therefore all though we say that we have non-technical subjects like humanities and social sciences. But I would I generally have been talking this is human engineering and social sciences. And therefore all engineering, whether you call it civil engineering, mechanical engineering, electrical engineering and this is also human engineering and social sciences, which are in fact complement of each other, it cannot be separated. Somebody give example, I was hearing the example of this current COVID. See, the COVID has definitely attacked us and we had nothing to go but what was important is immunity and for immunity, it was said that do yoga maintain these things, and in fact, to a great extent, that was the only medicine or support that we can think of and keep ourselves fit. So, therefore it's the human engineering which has actually worked against this COVID-19. So would say that let us not talk of non-technical, it's all every part is an engineering if you take it that way, Now, I'll come to what has been said. Well the flexi or flexible academic program it has been discussed and its very good thing, because I know, being in IIT here, many of the students do not like to read a particular subject, but because of the force of their parents, they go for those I would not like to name the parents or the student, but I can tell you that parents have come across who wanted that their son should become a computer scientist, but the fellow, the student wanted to read in Physics. He wanted to do SALSA something like what Raman did and all that. I've come across a student whose parents wanted that he should do engineering, but he said no I'm interested in music and I want to become one of the best directors, music directors of the world. See the feeling of that and the many people 2020 has given all scopes of that. And being in this context, if I tell you IIT Kharagpur, is virtually a multidisciplinary educational research university of the first of its kind in the country. And we have all these options open. Very, in fact, very much coinciding with NEP 2020, last year itself we have revamped or programed and we have merged the options of NEP 2020 into our program and I can tell you that we have

at IIT Kharagpur now earlier it used to be MSc in physics, chemistry mathematics, geology, geophysics. We have made it BS-MS and now the entries are at BS level If the fellow is interested to go for MS, he can go. If he is not interested, he can take the degre after 4 years. Now, we have also made options, for example-school, Many of our students who are talented, Sometimes, once they come in and they come across some of the seniors and some of the options which are open, then what do they do? They say that okay after 2 years, let me go out and start a startup. The idea which they have 2-3 of them, come out and want to do something So we have made options for that. They can go out, work for 1 or 2 years, see that their program or their startup starts, and they would like to come back. We have made that program. Supposing somebody is interested that I would like to have a few courses of this subject and say for example somebody is interested, somebody is reaching in BS Physics, but he wants to have some courses of electronics. We have made the option that yes, you can pick up some of the courses of electronic which of your choice. And we have not made the cap that you have to get so much CGPA. We have made that okay, simple CGPA of around 6.5 is enough, if you are interested. Similarly, we have also given options of music. We have an Academy of Classical and folk arts We have a center of happiness. We have also opened one center which is going to be inaugurated very soon, Academy of Leadership. So we have given so much options to our students that they can pick up. You know that somebody talked of the law school. Yes, we have the law school started in 2006. So we give degree to persons who have taken law degree, they can come here and read, get a degree from IIT Kharagpur. Some of the scientists who have done MSc, B.Tech. they can come here and take a degree in intellectual property law. So the options are very much open. We have also talked of some of the IITs students. Some of the students says students from IIT Patna wants to come to IIT Kharagpur and pick up some of the courses. We have made options for that. He can come here for be at some semesters and then take up some courses and we will give him a certificate that okay, these are the things which he has done at IIT Kharagpur. We will not give him ultimately degree from IIT Kharagpur, he will get degree from IIT Patna only, but he in his curriculum it can be set. Now, this needs to be debated with other IITs as well, but at IIT Kharagpur, we have decided. Similarly from IIT Bombay somebody wants to come to IIT Kharagpur, or from IIT Kharagpur somebody wants to go to IIT Bombay and pick up some of the subjects in a particular discipline where he is interested, I think we need to be we have open up we have discussed and we would like to talk to other IITs. So, if in the context of NEP systems of various options that have been given, I think IIT Kharagpur has taken lot of things. We have also talked of introducing even the language. Some of the students in 2021, those who have joined, we have asked them or we are going to ask them that okay, if you are interested that some of the courses will be taught in Hindi or Bengali or in any subject at Telugu we have decided 3 subjects we can do that help as well. What is important for IITS? Is that in IITs we have a problem

supposing the person enters, we cannot give him a diploma or we cannot give him a degree which is lesser than B.Tech, but what we have thought that if he can want to introduce what NEP 2020 is there, we have said that the first year is a zero year because there he just learns about the preliminary of engineering. If he enters into IIT system, and the second year he picks up the subject of his choice in a discipline, and after 2 years, if he wants to go out for some time or he wants to say that okay I'm quitting, then we can give him a certificate. Then the 3rd year, what we want that 3rd year is learn more subject of that, then we would like to give him a diploma. Now this diploma word is being very debated. But still, I think it is possible if it is acceptable to the industries and other world-wise. Because IITs have the brand name and we would like to maintain the brand name and therefore it is not suddenly possible until it decided at a larger level, at the national level that yes at IITs also we can give this and acceptable to all. Then we can give at the end of the 3rd, and the 4th year, anyway degree. We can also think of if somebody has say 160 credits hours is now 170 or so. Now if somebody does about, say 150 hours credits or so, we are thinking that we can give him a B. Sc in engineering on say microelectronics or instrumentation or maybe civil engineering, something like that. What resources we are also debating this part and we have taken a decision. The whole thing will be parts of more that's why I'm not leaking everything. But these are some of the discussions that we have gone through. So while maintaining the brand of the IT system, I think we have incorporated more or less all the parts of NEP 2020. So arrived the exit-entry options are there. We can allow the NIT students to come in here and take some subjects and go ahead This is also possible that we are thinking of non-JEE. Also, we are thinking that we will have some courses on certificate courses on economics, certificate courses on law. certificate courses on management and even mathematics. We are thinking of these courses are the same for farm machinery, if we can think of precision agriculture.

Well, I would also like to join Prof. Desai in congratulating the Institute Director, and the whole team, Prof. Neetesh Purohit Ji, and all the people involved in creating this program because these are the beginnings that one has to do, and that is why when we talk of the poor better drafts then interrupts and all that. So, I think the beginning has been a good one a lot of discussions have taken place from panel one to panel five and you are planning to have the whole draft ready, and it will go to other locations for their deliberations. I can tell you certain things see MHRD had given us. Think, I attended the council meeting in 2019, 27th of September, and there the ministry wanted that each of the IITs must matter it is 10 to 12 institutes around that So that way even IIT Kharagpur has in the vicinity of 10 or 12 institutes which are in Kalyani, Durgapur, IIST, and so on and so forth. So, in fact, I would say that if there is something which has to be done may be the beginning of that could be started with these institutes like NITs which are there, IIST is there, IISR is there. So think these four five six institutes which are in the vicinity of IIT Kharagpur.

IIT Kharagpur can form the consortium of these institutes and can create some sort of a movement of NEP that we are talking of with regard to the student's logistics this is what Secondly, I would also like that students to IITs agree with Prof. Desai, students do conduct certain programs in all the IITs like Spring-Fest, Mood-Indigo and Kshitij, and all that and through they also call the students of some other institutes and all that. Now there also they can discuss some of the things to shy away, that effect of the fear and the working in those institutes or reading with these students and having camaraderie with these students to learn from them then so this can be also discussed. Thirdly, what I wanted that the industries the parents as Prof. Desai said, I think right. We have to think of these parents, the students and the industries they should also know that if such virtual institutions are created how they are going to attract these candidates this has to be taken and ultimately the government has to pitch in to answer some of these questions. Think, if we take it holistically this particular national conference will go a long way in starting and making an initiation for this. I think with this would like to thank you very much for giving me this opportunity and may be we'll have deliberations at some other locations when the time permits.

'Imaginative and flexible curricular structures will enable creative combinations of disciplines for study, and would offer multiple entry and exit points, thus, removing currently prevalent rigid boundaries and creating new possibilities for life-long learning. Graduate-level master's and doctoral education in large multidisciplinary universities, while providing rigorous research-based specialization, would also provide opportunities for multidisciplinary work including in academia, government, and industry.

"Para 11.5 NEP 2020"

Prof. Ajit Chaturvedi

Director, IIT Roorkee

Abstract of the speech delivered during 1st National Conference

Let me at the outset thank the organizers for giving me an opportunity to address the inaugural session of this very ambitious program. The flexible Academic program. The creating a vision and a road map and a methodology to make sure that flexibility in the Academy program can be introduced at all levels pursuant to the direction and the road map proposed by the new education policy 2020. This is indeed a very laudable objective if we can keep the students interest at the heart of all our academic activity. Naturally, our academic activities will flourish. The students will also integrate well with the programs, and we can make the best use of the natural and raw talent. That the students bring to the Academy programs using this it should be possible to create a very innovation oriented very forward looking and a promising academic program because it will have the best interest of all stakeholders. Having said this, must also use this opportunity to highlight what believe may be the most important challenges. The first challenge that I that foresee to implementing a meaningful flexible character program is coming up with the right admission processes. Because even if the program allows entry at multiple levels, I think it will come to finally the system or the process that we envisage and implement to be able to provide admission at multiple entry levels. This I see cannot will not be an easy road. It will have some hurdles, some bum penis. Will be there, but that doesn't mean that it cannot be addressed. We must make a beginning somewhere, even if we don't want to do the best possible scenario at the very beginning, we can make a beginning with some limited goal, and then when once we learn with that limited goal in mind, and once we succeed in that, it should be possible to Make it more and more liberal, the second challenge that! foresee is probably a lesser challenge Master studies or doctoral studies? get a feeling that, well this course is too tough this.

Keep that in mind at the design stage itself. When this today Telugu television will take place and that is, see that many students during the course of their undergraduate studies or master studies or doctoral studies. Get a feeling that, well, this course is too tough discourses, something that probably they did not make the right choice by taking admission in this institute or in this program. Yes, sometimes they have self doubts. Whether I'm intellectually equipped, academically prepared to pass through this academic program into which of short admission, and I've got admission because I am having so much difficulty in the assignments. The laboratory practicals are having such, huge amount of difficulty. The concepts are not easy when I approach the teacher, the teacher could not explain to me. So lot of these problems arise and it should not happen that the student looks at these exit options as the easy way out. Because many students, once they pass through this turbulence or through this phase of difficulty in the program, come out with shining colours, they will face this difficult. They know that they have nothing else but to swim through it and gradually they Start learning to swim and they even start flourishing. Some students who have seen, like they have struggled in the second year. They grow up into 3rd year and by the end of the final year they are like very proud. Graduates of the academic program. They start doing very well. They start loving the discipline, they start loving the profession. They are completely transformed. So what I'm saying is that the academic program throws lots of hurdles, throws lots of difficulties. These difficulties, the student should learn to swim through navigate. True and of course, if it is truly something that some

error has been made in terms of the admission or in terms of the choice of the student, then of course the exit options are very welcome. They are required. We routinely face these problems in the IT system that some students continue to struggle despite lot of support. From the system, years on together and then we feel the need that yes, if we had a good exit option, such students who may have talent in some other domain, they may be able to do better in that domain and they should be allowed to exit with an honourable exit. So definitely there is a need for it. I have absolutely no doubt in my mind that both multiple entry and multiple exit is the need of the our IIIT Allahabad needs to be congratulated that it has taken the lead in this direction to spark a debate on this very important topic. I'm sure that these deliberations will show the light to other. Institutions that what are the possibilities in this regard and later on I think different institutes will adopt different mechanisms of entry and exit, but at least a good pragmatic beginning needs to be made. If these deliberations also set milestone in terms of a timeline, that means within a year or 2 years, will start doing implementing it at some scale. Play some technical difficulties in spirit coming forward. I'm profusely overjoyed to take the opportunity to introduce.

Prof. V. Rajakumar

Director, IIT Bhubaneshwar

Abstract of the speech delivered during 1st National Conference

First of all, it is commendable that IIIT Allahabad has taken up this endeavor and involved other IIIT's as well in this exercise. First of all, I hope that am audible. Am audible very much? You are audible, sir? Yeah. Okay. So the next question is you have put up very relevant questions from the previous panel. So are you asking me for my opening remarks or some address the issues you have rised just in the preamble? That would be great. If you can please put your views and the themes. Floor is yours. We would love to hear your comments on not only just on comprehensive academic norms and rule book for students enrolled under FA P you could also talk about Entry-Exit norms but we already had a round of discussion on that topic, right? Sure. So certainly flexibility is a prerequisite for creating a system with the important features FAP 2020. Certainly that flexibility can be provided with a totally redesigned system and it can also be done by applying some important modifications and flexibility in the existing system. In one of the previous exercises it was learnt that there is an attempt that is being made to bring the entire reply system onto one set of norms to agree to one set of norms so that it can be effectively done. On that occasion also made a comment mentioning that this exercise can be done also in autonomous board by an autonomous institution and the system can learn from there. The entire system involving other institutes can learn from there and therefore one can certainly the system will further evolve. It may take longer for the system to evolve in case it is done in an autonomous bought by an institution. If it is done by a group of institutions however the implementation can be done faster and one can implement the features. Certainly even in the earlier system where we have no possibility where the system is not very multidisciplinary in nature the exit is that whether we complete the program and leave or drop out in between. So otherwise there were no and no other exits possible in the system. Certainly the experience is that we do have performing at different levels. There are students who are interested in the program, who do very well in the program and complete the

program. There are students who go off the track mentioning that they do not have so much of interest in the program. They want to complete their degree and somehow take a degree. But their interest lies somewhere else. So we do have a good percentage of such students as well. Who do not perform that well in a particular course. If I may say so. It can also make a program somewhat invaluable for a student. And once a program becomes irrelevant for a student. It will only become a ritualistic exercise. And certainly the student won't pay attention in the courts. And we always find some students who have weaknesses. And they're unable to cope up with the program. And they may spend a few years and after a few years. So any institution may make a decision saying that the student is not made for this program. Therefore his name should be written off of roles of this Institute under this kind of scenario. Certainly multiple exit is a very useful exercise. And where it can be it can fix the elements have mentioned in the system. And it can be very effectively used. When you have multiple exit. Suddenly a person should have score to enter somewhere in some other program. So therefore multiple exits also call for multiple entry. And when you do this in a systematic manner Now in my opinion, when you do when you provide multiple entry and multiple exists rather I'll put it the other way. Multiple exits and multiple entries into a curriculum. It is important that you have certain level of completeness. Ideally speaking, one can switch over at any time from one program to another program, and system can permit. But when you do when you expect that kind of a system, you need all a good number of institutions to be in such a discipline, strong discipline that their curriculum should need to be almost same. And lots of commonalities should be there. Therefore, to avoid that kind of requirement it is essential that some degree of completeness is absolutely essential at different stages and it is certainly possible. For example, the first year engineering in a typical four year beta course, has somewhat common package across the different institutions, so that can be a point as well. But then the question of those who lose interest in the faster itself may come up into the picture. But then slow pace program can make them complete that kind of completeness and therefore it can be implemented. It is a good idea that the completeness up to a certain level is a prerequisite for the exit at whatever stage. There is another type of exit that is very much possible in the system. When you admit a student into a four year B.Tech program. And if you find a student unable to cope up or not able to take a four year degree of the caliber of a particular institution. We can also think of providing a diploma degree to the student, in which case you don't have to worry about being the student entering somewhere else. You yourself is providing a different degree options to the students. That kind of system is also possible.

'This National Education Policy envisions an education system rooted in Indian ethos that contributes directly to transforming India, that is Bharat, sustainably into an equitable and vibrant knowledge society, by providing high-quality education to all, and thereby making India a global knowledge superpower.'
NEP2020 Vision para

Prof. Rajat Moona

Director, IIT Ghandhinagar

Former Director, IIT Bhilai

Abstract of the speech delivered during 1st National Conference

I'm happy to be here and looking at the Flexible Academic Program for IIITA. There are few points I mean, first of all, let me say that it's a very well articulated but I have few points that I want to actually before we get into the curriculum of it, I want to actually look at certain other things. First is, I mean, are we clear about the objectives? That is number one, because I have not seen the objectives very cleasy articulated. Why and what is the reason? Why we want? For example lateral entries have been proposed after Class 12th after you know minimum certification but then the certification probably does not happen. Then after that there is a diploma or equivalent. Then there is an advanced diploma or equivalent. Then there is a B.Tech or equivalent. So essentially, what is being done is that entire academic curriculum of B.Tech, M.Tech, Ph.D is created a pipeline where there is a lateral entry that is possible, and that's a very interesting point. However, the modality, the method on how do you admit students? For example, after class 12th it is through JEE and there is no problem on that through JEE Main. But how do you do evaluation of people who actually come in the 3rd semester entry into the 3rd semester? What is their preparation minimum preparation that is required and how do you judge that they actually are there at that level or not? Similarly, how do you do it for the people who are actually coming after 2 years, that is entry into the 3rd year, how do you actually what is the minimum requirement? What are the minimum exposure that is needed and how do you handle the admissions? And same thing goes on. In my opinion entry into the 3 year is probably not a meaningful entry because it's too close to the exit of B.Tech final year, I mean B.Tech program. So 3rd year entry is probably getting a litíle to you know little to advance into this thing. You probably would not even know the students well enough and their capabilities. The exit side, yes, I mean, I see lot of exits and essentially at every year there is an exit. But again, the question is, do we really need these many exits? What is the purpose? What is the max you know when a person goes out? Let's say with the advanced diploma in a particular program, what is his employability? Where can he actually be, you know which all places can he go for higher education? And what is the minimum preparedness that is actually available to him, especially considering that a student may actually join at the end of first year may exit out at the end of second year, then do we still be able to handle this situation? So these are the things that we need to actually work out. To me it appears when we are actually getting into the flexibility then having these rigid structures of years should actually not be there. It should be you know program should be made completely credit based, in which case students may come at any point in time provided they have certain credits who can specify the minimum requirement, and probably one entry into the B.Tech program in between is good enough. One entry at the beginning, one entry at the in between. And then there is an exit, which is a formal exit of B.Tech program. However, some people might want to continue into the Master's program and few more students might actually join into the entry of Master's program. And then probably yes, am fine postgraduate diploma after one year and then the Master's program, M.Tech program and then it continues for Ph.D. Essentially, outgoing students will actually get at least 2 degree certificates, B.Tech, M.Tech and Ph.D of course. But in between they probably are going to get diplomas. They probably are going to get only certificate program, So once somebody crosses four year at least, it is guaranteed that you will get the B.Tech degree okay or at once 4 year of this program that is proposed. However, I would still say that if we look at the credit system and say if somebody has crossed these many credits and then

in credits we can specify the mandatory courses of department, mandatory courses of the institute, non-department, optional electives departmental, optional elective which are open elective Then the humanity courses, other social courses, social activities and you can just workout on that. And then one somebody qualifies the minimum requirement for an exit. He is now eligible for that an exit. What happens in this particular structure, rigid structure is? For example, if somebody because of whatever reason, because he was not well, he took a semester drop or because he got a fail grade in one of the courses, adjusting them becomes a lot much more difficult unless you have asking him to repeat the entire year by itself and that will probably be too taxing for the students. So this is my input right now.

Prof. A. G. Ramakrishna

IISc, Bangalore

To my knowledge, IIIT Allahabad at Prayagraj is the first institution in India that is flagging off a full-fledged, planned flexible academic program. The Director of IIITA appointed a committee early on to look into creating such a program under NEP 2020 and a lot of creative effort, discussion went into the same.

It has been my privilege to have been a part of IIITA's Senate Sub Committee, whose mandate was to fine tune the various provisions of the FAP implementation proposal. The proposed curriculum closely matches with the expectation of NEP2020: 'A holistic and multidisciplinary education would aim to develop all capacities of human beings-intellectual, aesthetic, social, physical, emotional, and moral in an integrated manner. Such an education will help develop well-rounded individuals that possess critical 21st century capacities in fields across the arts, humanities, languages, sciences, social sciences and professional, technical, and vocational fields; an ethic of social engagement, soft skills, such as communication, discussion and debate; and rigorous specialization in a chosen field or fields.' expect well rounded individuals to come out of this new program.

IIITA is approaching other institutes/universities of repute for designing new courses and offering to FAP students. Such great efforts of the faculty members of IIITA are laudable. I am eagerly looking forward to seeing the outcomes of this ambitious initiative of IIITA. When many institutions join hands with IIITA, then there will be a favourable position for students to be able to transfer her/his credits to another institution, if forced by unavoidable circumstances. In future, one desirable feature am expecting from such programs across many institutions of higher learning is that the students of any institution being allowed to credit specialized courses (not being offered by them due to lack of faculty members in those areas) in other partner institutions across Bharat with seamless transfer of credits (with reasonable restrictions to limit misuse). This could also involve Universities of repute elsewhere in the world.

It goes without saying that such flexible programs and their benefits must be extended to primary. secondary and higher secondary school students too. This will have the potential to create innumerable Stalwarts of the calibre of Abdul Kalam, Ambedkar, CV Raman, Homi Baba, Satish Dhawan, Srinivasa Ramanujan, Visvesvaraya, et al. for Bharat.

Prof. T. N. Singh

Director, IIT Patna

The FAP Framework designed by IIITA seems very promising in achieving the objectives of NEP2020. The para 13.4 of NEP2020 states that, 'Faculty will be given the freedom to design their own curricular and pedagogical approaches within the approved framework, including textbook and reading mater selections, assignments, and assessments Empowering the faculty to conduct innovative teaching, research, and service as they see best will be a key motivator and enabler for them to do truly outstanding, creative work.' The FAP framework has created almost all these opportunities for faculty. Therefore, it may worth to watch the response of the students and faculty to FAP framework, I wish IIITA for successful running of FAP.

Prof. Neelesh Kumar Jain

Former Director, IIT Indore

Abstract of the speech delivered during 1st National Conference

First of all for moderating the session and enlightening us about your limited understanding. But it was a good presentation where certain tone has been set. I also compliment the IIITA for organizing this. Think what is important that lot of things the IIT have been doing, whether it is old IITs or new IITs 2G or 3G, the best practices of IITs, for example, the multi sequence research, the flexibility. I think you talked about the PhD student doing the credit course work. That is, I think already there in all the IT for the PhD student and can share before start. What we have been doing being the new IIT's second generation started 2009 from 2013. What we have done when we started our PG program in 2013, we made for our BTech student to have BTech plus MTEK. So in the 6th semester the student can go for MTech program and the fourth year becomes the first year of the MTech. During the 9th semester of the program the student can go for the PhD also. So we had a lot of students, our BTech students, at least five, six have graduated who have done B.Tech from it and directly enrolled for the PhD and some of these students have done BTech plus MTEK also at the same time, whatever PG program we started, whether it is MSC MTech, we make that to the dual degree program. So during the fourth semester student can opt for the PhD and it's internal conversion. Also there is an exit option that if the student feels that okay, fine, at the end of the two years or she feels that the student needs to exit, then they can exit from the program without going into the PhD. And we gave the two different degrees, MTech, PG degree separately and PhD separately. So we know that it is a part of this. So it gives the actual early exit option which we are talking about. It is there. Recently in 2019 onwards we have started the MS

research program in Computer Science, Electrical, Mechanical, HSS and Astrophysics, Astro Nomi and Space Engineering. That's one Department. And what we are doing that PhD student somehow. If they are not able to cope up with the rigors of the PhD program, then at the end of two and two and a half years they can exit with the MS research program. And think this is going to help us a lot. And it is good that whatever society door was doing in terms of these things, it has become sort of part of any peak other thing which we did. We have been doing that the electric courses of any academic program. We have all the open elective courses. So students can take any course. Whether it be tax students or MTech students or MSC student or MS research or PhD, they can take any course. So as a result, this has helped the student to get a width in their learning. They get the depth when we are doing their own courses. But allowing some computer science students to take the mechanical courses or taking the courses for computer science, it helped in giving the weight to the student. And as a result, the other thing which we did, we dedicated one entire semester for PhD project and also we kept the minimum credit for our PG programs and PhD program so that students are more able to do the research. Our experience has been that there are two types of students. One type of students who do very good in the course work but they may not be good researcher while the other type of students who are not so good in the course work but they end up with a very good research. So that flexibility is there. And we also allow these students to do the thesis outside IIT Indore. The entire PG thesis can be done entirely. Deposit can be done abroad or in the organization or with some other academic Institute with one supervisor from it and the other supervisor from that Institute or organization. So that has helped actually in a lot what I would suggest that I'm sure that each IIT, NIT and all such Institute isols they have some best practices. And if you are thinking of having a Consultium, these best practices from each participating Institute can be documented. What are the best practices they have been doing? And it's not that everything is new in this new educational policy. A lot of things are being done by our old IIT. That's why they are so good in terms of whatever the flexibility, even the research part only problem has been recently the funding part. But all the faculty members of this, what you call as the CFTI essentially funded technical Institute, the faculties are involved in the cutting edge research. Phd student do that. Now. The other challenge which we should be focusing on, the internationalization government has launched a lot of schemes Asian Fellowship is one where you have got a lot of things that are coming from studying India and other schemes are there spars Bajra where you can involve all the international faculty. But the major problem with this scheme has been that it is one to one collaboration. Deep engagement of the international faculty has been for the research purpose. But what is important that you involve them in the teaching. And now since this online thing has matured to a level where people, any person from any part of the world can engage in that and that flexibility, somebody sitting in UK or somebody sitting in USA can take the classes and our students can attend either in a hybrid mode or in online mode. So that involvement of the international faculty, which are being engaged through spark or yarn or such type of schemes, if that can be increased and accelerated, that would help us in the internationalization. Internationalization doesn't mean that the person has to be physically present in the campus now, even if they are involved in teaching, obviously they are involved in the research. The second part is the supervisor supervising the PG student, PhD student and also having this thing, the joint degree program is another aspect which would help in increasing internationalization.

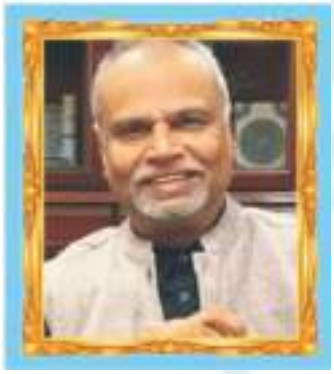
Similarly for international student, also physical presence We need to think what we can leverage the advantages of this online thing. And think we should thank t covet, which has helped us to take this online teaching and learning and even research administration to higher mature level that would help with the internationalization. The other part that whether we have the multiple entry or not, am not sure because as far as the admission entrance test are concerned, JEE means advance or JAM for MSC program or gate for the PG programs. Whether this multiple entries possible or not, am not sure. But yes, multiple exit we have been doing and I'm sure that other it is also doing what we can do. We can make a document which can include the best practices and if anything is required from IIT, we are very happy to share what we have been doing And I'm sure that other IET other, it's doing something unique. But the problem is that it is not shared somehow among the Institute. So if such consortium has to be there. Then these best practices can be shared not only before the covet but also during the covet.

Prof. Prasad Patnaik BSV

IITM, Chennai

Abstract of the speech delivered during 1st National Conference

Some of the student having Flexible Academic requirements and essentially planning to go their startup. If they are really little focused on certain and students actually who are not doing well they have passion to peruse and that may want to go ahead little bit natural direction and come back to the system alternative points. Perhaps virtual university and consensus that IIIT Allahabad is planning to initiate think along with these direction. Perhaps look at some of these aspects which virtual university can perhaps help them to sort of come back the system in certain reasonable ways. Perhaps I would also suggest that to look at some of the global example is somebody has exited after completed 100 credits out of 150 credits and how to get the remaining 50 credits completed to the virtual university system can be thought out so that the student with whatever reasons the existed at some point their credits can be used in retrofit manner perhaps the virtual university can help along those merit and we can initiate the process where students also can come up with solution. Especially with the senior students and students who are having the plans to exit will have better ideas. I will suggest the student body may come up with ideas to strengthen the functioning of FAP.



Prof. Bhushan Patwardhan

Former Vice Chairman, UGC

Abstract of the speech delivered during 1st National Conference

Let me first congratulate IIIT A for organizing this excellent conference, the National Conference on FAP or Flexibility Academic Program. And I must congratulate the Prof. Madhvendra Mishra and his colleagues, especially Doctor and Professor Vinit Tiwari who have been in continuous contact with us and could not join the conference because of other engagements. But this is just to appreciate the effort taken by IIITA prior. And the subject which you have chosen for this conference is very important because flexibility is key issue in the national education policy. All these days we have been continuing with the British model typically constructed to create clerks and baboons in the East India Company and affiliates. Our original education which was the Gurukul system, there was a flexibility and the teachers or gurus and shisha used to discover based on your individual interest and capacities which track can be taken. But subsequently we lost that and our education program became more rigid. The University system adopted the British educational system giving degrees and these degrees primarily were leading to the degrees like pact become in the mainstream. The professional focus on education, professional education such as technology, medicine subsequently came in after the independence. But earlier, although few engineering colleges were there, their focus again was to help that time regime. So now as we are celebrating this conference of IIITA is extremely important. All these days we were considering students brains as empty baskets and teachers thought that it is our monopoly to teach and institutions thought that whatever we offer as programs, students should take it blindly. So when students want any course to be taken, she will be given prospectus, prospectus will have different courses. Student can choose the course. Once you choose the course then you are given admission to that course. You are given syllabus. After you receive celebrities, you also receive some kind of a reading material or you receive question banks, model answers and also most important questions as well so that you can prepare will for the exams and your evaluation is done based on how best you are able to reproduce what teachers have taught you or what you have read as model answers. In the whole process we have not considered students aspirations, students interest and the market requirements and the country requirements. All these things were not there and the rigid curriculum was blindly followed and it was actually mandatory for students to compare. But this new flexible academic program offered by the new education policy, the emergence of academic bank of Credit we have seen or what is called an ABC. Now ABC is like any other bank in which you can deposit your credits. And why wait till such time you take admission in College? Those students who are interested can start earning credits right while they're in the schools. And these credits can be from varied subjects, from languages to performing arts to engineering or to it or to any other thing, which student wants to excel and why? We have been expecting that every student must complete the degree in the duration which you have defined. So who has said that BA should be only of three years or become should be only of three years or engineering should be of four or five years. Why this? Some student may be able to complete it in half the time which you are prescribing. Or some student may take a longer time. If they take longer time, why put a stamp of failure

on that? It is a permanent damage you are doing on his emotions, on his social presence This is not good for the students career. So all this will be taken care of by academic bank of credit by giving flexibility to students to choose anytime, anywhere, anything, any subject. So this kind of student centre approach which National Education Policy 2020, under the great leadership of Professor Kasturirangan has taken, has really given a very good instrument for the educational institutes to promote flexible academic programs. And under this conference, the kind of collaborators I have seen you have been able bring eminent institutions all through. And the institutions like promoting voluntary organizations ar connected with top of the top institutions including national universities and IITs and IIMs and other state and private universities. It's excellent conglomeration. I could see happening at the Priya garage which made actually the Sandham of all the branches of knowledge focused to understand how these flexible academic programs are necessary and how the new education policy is giving us an opportunity to promote flexibility. And this will ultimately help in improving the employability and entrepreneurship among the students. I'm sure this national conference has opened many new thoughts. As many new avenues and new models will emerge from the discussions which have happened there. I wish again, triple it all the very best in their future endeavor. I'll be happy to connect with you for any such programs which are in the interest of the students and in the interest of the people and our country.

Dr. Pankaj Mittal

General Secretary AIU

Abstract of the speech delivered during 1st National Conference

शिक्षा संस्कृति उत्थान न्यास के नैशनल सेक्रेटरी श्री अतुल कोठारीजी, इस ट्रिपल आईटी इलाहाबाद के डायरेक्टर प्रोफेसर पी नागभूषण जी, ओर्गानिजिंग चेयर नीतेश पुरोहित जी. ऑल द एमिनेंट स्पीकर्स हु आर प्रेजेंट हियर, द पाटिसिपेन्टस. ए. वेरी गुड मॉर्निंग टू यू नमस्कार। मैं सेक्रेटरी जनरल हूँ ए आई यू की, ए आई यू मेरी कर्मभूमि है, और उसके साथ-साथ शिक्षा संस्कृति उत्थान न्यास भी मेरी कर्म भूमि है। क्योंकि मैं जानती हूँ कि अतुल जी के नेतृत्व में जिस तरह से शिक्षा संस्कृति उत्थान न्यास नेशनल एजुकेशन पालिसी को जमीनी लेवल पे लागू करने के लिए कोशिश कर रहा है, और बहुत सारा सक्सेस भी उन्हें मिला है। तो उस तरह से कोई गवर्नमेंट आर्गेनाइजेशन भी उतनी मेहनत नहीं कर रही है। जितना की एक छोटा सा शिक्षा संस्कृति उत्थान न्यास पूरे भारत में जगह-जगह जा जाकर पहले उन्होंने अवेयरनेस क्रिएट किया कि फिर नेशनल एजुकेशन पॉलिसी क्या है, और अब कैसे उसको इंप्लीमेंट करना है। तो उसके लिए सबसे पहले तो मैं बधाई देना चाहूँगी अतुल जी को शिक्षा उत्थान न्यास को कि उन्होंने इतनी मेहनत इस पॉलिसी पर की है और अगर ये पॉलिसी ठीक तरह से लागू हो गई तो इसका बहुत बड़ा कॉन्ट्रिब्यूशन है तो वह शिक्षा संस्कृति उत्थान न्यास और अतुल जी का होगा। अब जब हम फ्लेक्सिबल एकेडमिक प्रोग्राम की बात करें, इसके डिटेल्स में, तो बात करूंगी जब मैं, एक सेशन में बात करूंगी और

जब हम फ्लेक्सिबल एकेडमिक प्रोग्राम की बात करते हैं तो तो मुझे लगता है कि यह एक तरह से बिल्कुल बदल गया है। जैसे कि कहते है ना कि 100 साल पहले आइन्स्टाइन ने एक पेपर दिया अपने बच्चों को और जब वो पेपर उनकी टीचिंग असिस्टेंट ने देखा तो उसने कहा की सर कोई गलती हो गयी है क्योंकि same paper you gave to your students last year also- तो सैम सेट ऑफ स्टूडेंट्स को सैम पेपर दिया है, कुछ गलती हो गई है, तो आइन्स्टाइन ने कहा गलती कुछ नहीं हुयी है, पेपर सैम है पर ऐन्सरस डिफरन्ट है क्योंकि 1904 में आइन्स्टाइन ने चार पेपर निकाले थे द्रव्यमान ऊर्जा समीकरण $E = mc^2$ और उसकी वजह से पूरा, आई मीन, फिजिक्स का paradigm पूरा परिदृश्य ही बदल गया था, फिजिक्स एजुकेशन का जिसकी वजह से क्वेश्चन सैम थे ऐन्सरस डीफरैंट थे और इसी तरह नेशनल एजुकेशन पालिसी के आने से पहले और नेशनल एजुकेशन पालिसी के आने के बाद सवाल तो सैम है क्या पढ़ाना है, कैसे पढ़ाना है, किसे पढ़ाना है, और क्यों पढ़ाना है. पर ऐन्सरस बिल्कुल बदल गए है उसी में से एक है फ्लेक्सिबल एकेडमिक प्रोग्राम कि कैसे फ्लेक्सबिलटी ऐकडेमिक प्रोग्राम में लाई जाये तो इसके बारे में मेरे से पहले बहुत सारे स्पीकर्स ने बोला मल्टीपल एंट्री एग्जिट के बारे में बोला।

मल्टीपल एट्री एग्जिट ऐसी चीज हैं, जिसके बारे में हमारे बच्चे बहुत दिनों से सोच रहे थे कि कैसे मल्टीपल एंट्री एग्जिट हो और फ्लेक्सिबल एकेडमिक प्रोग्राम खाली मल्टीपल एंट्री-एग्जिट नहीं हैं. मल्टीपल एंट्री-एग्जिट तो है ही, इसके साथ-साथ फ्लेक्सबिलटी है. बच्चों को कि क्या कोर्स चूज करना चाहते है। जैसे आज अगर हम फिजिक्स कर रहे है तो साथ में मैथमेटिक्स भी करना पड़ेगा या केमिस्ट्री करना पड़ेगा, म्यूजिक नहीं कर सकते, इकोनॉमिक्स नहीं कर सकते, हिस्ट्री नहीं कर सकते। टोटल फ्लेक्सबिलटी बच्चों को कि क्या कोर्स करना चाहते हैं, कौनसी यूनिवर्सिटी से करना चाहते हैं। अगर आज आपने किसी यूनिवर्सिटी में एडमिशन ले लिया तो आपको सारे के सारे कोर्सेज उसी यूनिवर्सिटी से करने पड़ेगे, मतलब आप बाध्य रहेंगें कि अगर आपने ट्रिपल आईटी- ए में एडमिशन लिया तो सभी कोर्सेज वहां से करने पड़ेगें पर जो एकेडमिक फ्लेक्सबिलटी अब आ रहीं हैं उसमें ऐसी कोई बाध्यता नहीं है। अब आप एक कोर्स ट्रिपल आईटी- ए से करिये एक आई आई टी से करिये, एक जेएनयू, से करिये, एक दिल्ली यूनिवर्सिटी से करिये और एक इलाहाबाद यूनिवर्सिटी से करिये । पूरी आपके पास फ्लेक्सबिलटी है । इसमें ये भी मोड़ है, मतलब में जो चौथी फ्लेक्सबिलटी की में बात कर रही हूँ पहली फ्लेक्सबिलटी एंट्री-एग्जिट हो गया, दूसरी फ्लेक्सबिलटी कोर्स क्या चूज कर सकते हैं, तीसरी फ्लेक्सबिलटी हैं यूनिवर्सिटी क्या चूज कर सकते हैं और चौथी फ्लेक्सबिलटी हैं की आप किस मोड में पढना चाहते है। ऑनलाइन पढ़ना चाहते हैं, ब्लेंडेड पढना चाहते हैं, फेस टू फेस पढना चाहते हैं, ये भी फ्लेक्सबिलटी आपके पास हैं. और पांचवी फ़्लेक्सबिलटी जो बच्चों को बहुत ज्यादा जिसकी जरूरत थी, वो हैं टाइम की फ्लेक्सबिलटी। जरूरी नहीं है कि आप को उन्हीं तीन सालों में कोर्स खतम करना है, या उन्हीं चार या पांच सालों में कोर्स खतम करना है, जहाँ से आपने पढ़ाई शुरू की थी। आप पढ़ते रह सकते हैं जो एकेडमिक बैंक ऑफ क्रेडिट हैं जो मुझे लगता हैं की नेशनल एजुकेशन पालिसी का सबसे इनोवेटिव कान्सेप्ट है इसमें कोई सीमा नहीं है, ना उम्र की सीमा, ना यूनिवर्सिटी की सीमा, ना जन्म का बंधन, कोई बंधन ये बच्चों के उपर नहीं है तो स्टूडन्टस को एक तरह से मैं बार- बार बोलती हूँ कि students are treated like a king. Students centric policy हमारे देश को दी गयी हैं, और Students centric policy में जो एकेडमिक फ्लेक्सबिलटी बच्चों को मिली हैं, मतलब इसका कोई सानी नहीं है पूरी दुनिया में जब हम बात करते हैं ए बी सी की इंटरनेशनल फोरमस में भी तो वो सब बड़े ध्यान से देख रहे हैं की ए बी सी कैसे होगा? कैसे भारत सरकार, और कैसे भारत की यूनिवर्सिटीज और कॉलेज और टीचर्स एंड वॉइस चांसलर और प्रिन्सपल्स इसको इम्प्लीमेंट करेंगें तो मेरा ये मानना हैं की सरकार ने पालिसी निकाली हैं कि ए.बी.सी. की गाइडलाइन्स भी

आई हैं. रेगुलेशनस भी आई हैं, बैंक भी बन गया है। पर अब इसे इम्प्लीमेंट करने की जिमेदारी यूनिवर्सिटीज की है, वॉइस चांसलरस की हैं, उनको ये जिमेदारी अपने ऊपर लेनी होगी की कैसे इसको इम्प्लीमेंट करना है कैसे आपको प्रोग्राम की जगह कोर्सेज में एडमिशन लेना हैं और कैसे टाइम टेबल को एडजस्ट करना है, कैसे एक्स्ट्रा सीट्स क्रिएट करनी हैं अलग अलग कोर्सेज में जिससे की बच्चों को अकमोडेट कर पाए। किस तरह से हाइब्रिड मोड में एजुकेशन करनी है, तो मुझे ऐसा लगता है कि अगर यूनिवर्सिटीज इसकी एक तरह से जिम्मेदारी उठा लें कि हमें फ्लेक्सिबल एकेडमिक प्रोग्राम देना है तो बच्चे तो खुश होंगें कि क्योंकि यह तो उनका ड्रीम है, उनका सपना सच हो जाएगा की हमें फ्लेक्सिबल एकेडमिक प्रोग्राम हमारे को मिल गया और उसके साथ ही साथ NEP जिसको हम कहते है की जिसमें विश्व गुरु बनाने की क्षमता है जिस पालिसी में उस पालिसी के इम्प्लीमेंटेशन लैटर एंड स्पिरिट में हो जाएगा। अगर हमनें लेटर एंड स्पिरिट का इम्प्लीमेंटेशन कर लिया NEP का जो कि यूनिवर्सिटीज के हाथ में है, वाईस चांसलरस के हाथ में है, प्रिंसिपलस के हाथ में है, टीचर्स के हाथ में है तो भारत को विश्व गुरु बनने से कोई नहीं रोक सकता। तो मैं बधाई देती हूँ एक बार नीतेश पुरोहितजी को दोबारा से ट्रिपल आईटीए को, शिक्षा संस्कृति उत्थान न्यास को आपने इस तरह का बेडा उठाया और इस चीज को आगे बढ़ाया, तो मेरी तरफ से आपके प्रोग्राम की सफलता के लिए बहुत बहुत शुभकामनाएं आप सबको बधाई ।

Shri Rahul Singh

Member BOG IIITA

Managing Director Garg Associates Pvt. Ltd.

I must congratulate Indian Institute of Information Technology (IIIT-A). Prayagraj on starting the first batch of 50 students in B. Tech-IT & B. Tech ECE under Flexible Academic Program framework in the current academic year 2022-23 through JoSAA. This underlines the importance given by IIITA to effectively implement NEP-2020. FAP is in absolute alignment with National Education Policy -2020 and it clearly proclaims the idea of NEP that emphasizes on 'Inclusive & equitable quality education to promote lifelong learning opportunities for all.'

Being an industrialist, I am more attracted to NEP2020 as it talks about novel ways of teaching and learning. In particular in para 24.4 it has made a great promise that 'A digital repository of content including creation of course work, Learning Games & Simulations, Augmented Reality and Virtual Reality will be developed, with a clear public system for ratings by users on effectiveness and quality. For fun-based learning student-appropriate tools like apps, gamification of Indian art and culture; in multiple languages, with clear operating instructions, will also be created. A reliable backup mechanism for disseminating e content to students will be provided.'

NEP-2020 focuses on Student-Centric flexible education system that enables the students with

choice & flexibility to move within and across the education system as per their interests, abilities and requirements.

The kind of flexibility that students will be getting through FAP will allow them to understand their interest better (A hallmark of US education system which was missing in India) and act accordingly, which I hope will ultimately result in holistic quality learning free of any kind of fear or stress. It will also enhance employability & entrepreneurial qualities of students.

I extend my gratitude & best wishes to all the supporters, advisers, eminent academicians, board members and last but not the least, all the new students who are getting enrolled in current academic year under this new FAP framework. I am confident that FAP will facilitate learning in true sense. It provides desired flexibility to the students to plan their academic curriculum as per their requirement which is in alignment with their career goals.

Shri Alok Mishra

DDG, NITI Aayog

Abstract of the speech delivered during 1st National Conference

Thanks a lot for inviting me. I was very intently listening to what Professor Neetesh was saying and what other speakers talked about. Towards the end, you did raise several issues, and one of them was: what are the governing bodies for such a mega university? If you may recall, MERU, as the new education policy defines, Professor Neetesh again talked about several things abouí it, like the number of flexibilities that are already inbuilt in the IIT system, which is already working. He gave a great suggestion about documenting the best practices of IITs and IIITs and how internationalization needs to be integrated. We start thinking of the FAP if we have to drive up on quality and inclusive education. Let me slightly try to broach some of the issues here because always thought that higher education was the least disrupted of the sector, but COVID has made possible what was only in the realm of possibility. Coming to what matters the most to me because was involved in the conceptualization of the BRICS network university as a Director in the Ministry of HRD, realized that any idea of this size requires a robust governing structure. That clarity needs to be there. Whether you call it a consortium, a Mega University, or a Network of Institutions, they would more or less mean the same thing. Therefore, what tried to, as part of this multi-nation effort of BRICS, is that creating a governing board right sort of the FAP multi-institution governing board. The members of the board will be drawn from all the member institutions and members obviously would be directors of these institutions. There would be a Chairperson of this board who will be the Chairperson of the lead institution. It may be a good idea to create a lead institution although in the BRICS we did not have this concept of fleet institution. Why I am saying is that the lead institution does tend to drive the things in a positive direction otherwise everybody starts taking a back seat. Now what this large multi-institution governing board is going to do? I think first thing is to develop a strategic direction, second would be that approval of education programs which would be coming to it, will draft the regulation that needs to be sort of put in place, it will approve the

statutes of various coordination committees which I am talking about and then engaging with external institution and faculty. What Professor Neetesh was talking about that engaging with external institutions and faculty and the GYAAN or SPARK or watcher program. I think that there should at least be an assessment model of how the academic programs are doing. This is role of what you call a multi-institution FAP governing board and Chairperson being Chairperson of the lead institution so that there will be a responsibility and accountability. The second thing what we could look at is, at the next level, is a FAP Coordination Committee in each of the institution. Why I would say that this would be required because it's a muti disciplinary effort, heads of various departments could be there and different other members could be there but the idea is to implement the decision of the governing board but also for the operation of management of FAP at the level of the institution. The above are the most critical tasks that the FAP Coordination Committee would be doing. The third level of governing structure which i think is creating thematic group you may call it subject groups or thematic group for various streams or various subjects or various disciplines and they would be across the institutions and they will be providing support to the network institution in the identified field of their expertise. New Education Policy talks about multiple kind of flexibilities not all of them maybe possible but we need to start small but at least having this clarity in terms of putting the governance structure in place.

This governing structure will make us harmonious and the more organically evolved in the direction we should be adopting. My understanding has been that National Education Policy has come at the right time and implementing it post COVID is very essential. It captured the new trends which are already evident during COVID and provided solution of continuous education. Defining this governance structures at different levels to protect the interest of different institutions which are going to be involved in this mega consortium or network or network of institution would be quite important.

Dr. Mohit Gambhir

Director,

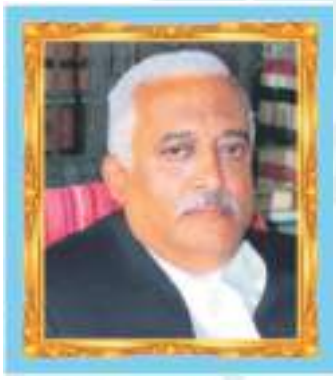
Innovation Ministry of Education

Abstract of the speech delivered during 1st National Conference

On a lighter note and now coming to the discussion part, it's a real thought provoking initiative. I must appreciate, must say it's been going around and remember from a couple of my friends who are there who are into European education system. We used to come back and then we were so mesmerized rather I personally when I used to look around that five universities are teaching this particular fellow and this person is so well groomed that anywhere, any part he can go. He has made so much acquaintances out there. He knows so many researchers. I'm sure if FAP we are able to do efficiently and effectively, it indeed can be done. And again, being nostalgic, I remember my graduation day somewhere around 25, 26 years ago. The electives, they were for the sake of electives.

We were never able to choose the electives we want because there was death of faculty members. There were death of lack of offering of that particular course. Now the point is if this is going to happen, just imagine if want to pursue something, certainly. But as per the previous one speaker mentioned and in the previous panels as well, the ground it has to be laid in such a manner foundation has to be so strong because lives are involved here. And one thing I always say and I must repeat here as well, education and skilling. These are two different tangents. What I again perceive maybe the seniors, they may correct that I believe education is something which makes us strong, which makes us lifelong learner. And then skill is something which comes in the entrance like where we say if want to spy something, I am not able to get in, let me enter, let me get this skill, let me be more at the upfront level. But the fundamentals from where? From whosoever is being offered it should be at a level that student no matter what, what is the visa we are being offering or they enable the Ex Institute or the VI or the PI. It has to be standardized, standardized in a manner that no glitch should be there take it. Because if we are offering something and we don't get it right, the outcome it will be hampered then and there. It will be a big thing. Another aspect which think from the innovation and the Department. I look around the kind of programs we run around. I personally feel in this FAP the way the direction or economies are moving. Question maybe an open question would like to throw in front of all these Star Wars because at the end all of you would be much more intriguing, much more involved in making this policy and forwarding it further. That why not to include something kind of again, I understand a course may be offered like an entrepreneurship, but just imagine if somebody wants to do a startup at X facility, X Incubator. Y call it Z facility. Is it included? Is it not? Shall we include that? Shall can they make as a general standardized manner? Again, open questions. I don't know. I don't have answers for all these things. But to all the seniors, to the learned people, can it be made in such a manner that if I want to do something want to go to X institution? But I suddenly realized that at the there is something which must go along, I must take. Will there be a flexibility that for the particular time period, for that particular direction I can go there and fetch that information and come back to VI. Can there be a duration set up? Can there be like two days, five days or two months or ten months? Because in theory, in fundamental, in other credit CC based courses it can be done. But how will we parameterize, how will we value, how will we put on those chunks when we say if I'm working on some kind of thought process, some kind of a startup, something which we now say even to our security members from our end innovation cells and we have started doing this in our national innovation and startup policy that they must be promoted or given the advantage if they are the board members of some company. It is happening in Premier institutions. But pardon me, it is not happening in other institutions. So if they have the Vin numbers, if they have other things, all those kind of facilities and can they be promoted in their cast and other things?So deliberations are happening, but at the student level, can it be promoted like from then and there? Any PSR that there would be much more amalgamation of different multidisciplinarity would be coming in and then I believe this is going to play a vital role that as the gist of or the base of our discussion topic. It's about the facility and again very strongly believe everything will revolve around the person, the course coordinator, the person who is going to initiate and then who are the teammates. How are these things going to be validated and credited at the end? Students must not be the software that's we have to ensure. It may be four years, five years, seven years. But the key takeaway should be something today if we are hoping in technology and other things like in it. I was just glancing through and

again just pardon me, I understand typos can happen but on the mindset of students like it's written there full stake development that is full stack development our PDFs. We have done that. But the point is these are minor, minor things. But if we are looking and if you're looking for that kind of perspective today we talk about what will happen down the line even next year when we say open, I would be coming in and we don't need to teach code or write code. Are we putting up that kind of flexibility in the course content enablement as well that the faculty and the course offer? Today we are having like 100% of enrollment. Will it be continuing for the third semester or third year or second year onwards? And what not if not how much flexible we are in our setting up as in the course content in the course, how frequently we are going to modify ECI, understand it is a core thing, but for it where application focus is more we are going on in EC, we can just pop up in it, if we are teaching fundamentals. Other things can also be or what flexibility to the coordinator or to the course offerings, we are going to open it. So ultimately to sum up wonderful idea, wonderful concept, way forward it has to go. But we must look towards inclusiveness, towards Indigenous stuff as well. Blindly not following that, rather taking inspiration, taking leads from what others have done, but make a system something of our own. Maybe it's a long race. So down the line, five, six, seven years after if somebody looks at they say yes, our policymakers are seniors, our education is there, they made something wonderful that others now they want to follow the system which has been created through this wonderful thought and kudos to everybody that we are talking and discussing this. Thank you so much everyone. Thank you Doctor Camped for your thoughtful comments, really liked your comment regarding how in Europe a student can become familiar to five different universities. A very famous example that have from us in Harvard and MIT that if you are enrolled in Harvard you are allowed to take any courses from MIT and vice versa. So no bureaucratic hurdle, it's allowed to begin with. Okay. But I'm pretty certain that it is working in this direction. The ultimate aim is that to have that kind of portability available in India we have to go a long way but we will definitely reach there. So thank you for your comment and have also experienced that electives are electives just in name. I'm from it Kanpur. We have a new Department, Department of Economic Sciences and I'm heading that Department. And when we begin the program we had six faculty members and 20 courses on paper. But of course, we couldn't offer those really courses, so all electric became just in name. But fortunately, now we are able to recruit. So now we are giving. So think the issue there is very different. It's not about what this program is talking about.



Shri Ashok Mehta

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Abstract of the speech delivered during 1st National Conference

अभी-अभी आप सबको मालूम हो ही गया है की मैं प्रोफेशनली वकील हूँ। लेकिन प्रश्न इस बात का है, मैं ट्रिपल आईटी में क्या कर रहा हूँ? फ्लेक्सिबल प्रोग्राम्स की बात यहाँ पर हो रही है, और वो भी ऐकडेमिक्स की हो रही है। 2002-2003 में यह कान्सेप्ट इनॉग्यरेट हुआ ही था। ये साइंटिस्ट माशेलकर जी को यहाँ बुलाया गया था। माशेलकर जी का सब्जेक्ट था इंटलेक्चुअल प्रॉपर्टी राइट। हर तरफ लॉ में भी और बाकी जगह भी आईपीआर, आज भी पेट सब्जेक्ट रहा है और उस पेट सब्जेक्ट का बहुत बड़ा जुड़ाव टेक्नोलॉजिकल इन्स्टिट्यूशन्स से भी है। यहाँ फ्लेक्सिबिलिटी नहीं एक फोर्स फुल ऑप्शन सामने आ जाता है। इस फोर्स फुल ऑप्शन की बात मैं क्यों कर रहा हूँ? क्योंकि रामकृष्ण मिशन, गायत्री परिवार और ट्रिपल आइटी से स्वयं ये आवाज उठी और वो आवाज़ थी- इथोस (मजीवे) की, मूल्यों की वैल्यूज की प्रकृति की। जरा सोच के देखिए टेक्निकली कि अगर किसी दिन सूर्य पूरब की जगह से पश्चिम से उग आएगा तो बस प्रलय ही हो जाएगा। तो हमारे जो कानून है, वो सारे के सारे प्रकृति पे डिपेंडेंट है। वो नेचुरल लॉ, उनकी अपनी वैल्यूज है। उनकी केवल मोरल वैल्यूज़ नहीं है, उनकी वैल्यू सनातन है। हिरोशिमा की बात अभी-अभी हुई। लेकिन जब मैं वैल्यूज की बात करता हूँ तो अब इसको फ्लेक्सिबिलिटी की तरफ ले जाने के लिए मैं धीरे से हर सब्जेक्ट का केवल नाम लूंगा। ये काम जो भी इस आवाज को मेरी सुन रहे हैं, ये उनका है कि उस सब्जेक्ट को कितने क्रेडिट देने है? उसको फोर्सफुल ऑप्शन बनाना है या फ्लेक्सिबिलिटी में एक ऑप्शन देना है। दस ऑप्शन में से किसी को एक चूज करने के लिए कहना है या तीन ऑप्शन में से एक चूज करने के लिए कहना है। Liking of the person is भी काफी कुछ डिपेंड करेगा कि वो उन सब्जेक्ट्स को चूज करता है या उन सब्जेक्टस से अतिरेक किसी सब्जेक्ट चूज करता। वो एक साल में ही पढ़ाया जाना चाहिए, एक सेमेस्टर में ही पढ़ाया जाना चाहिए या सारे के सारे, 8 साल तक 16 के 16 सेमेस्टर में रिसर्च करते हुए भी पढ़ाया जाना चाहिए। ये सब आप की फील्ड है। मैं टच करके छोड़ता हूँ। उससे पहले थोड़ा सा रिवाइज करता हूँ We are talking about non technical courses, तो जवाब मिल गया, technique is an art- तो नॉन टेक्निकल टेक्निकल का कोई कवेश्चन बचा ही नहीं। फिर आता है फ्लेक्सिबिलिटी तो फ्लेक्सिबिलिटी के लिए कल से जो बातचीत चल रही है. वो मल्टी- इस्टीट्यूट की चल रही है। आपस में किस तरह से वो काम करेंगे तो मैं जोड़ रहा हूँ 'ओरिएंटल'। कुतुब मीनार के पास के लौह स्तंभ का लोहा कैसे बना था? आज भी अगर रिसर्च का सब्जेक्ट हो सकता है तो बहुत से ऐसे मेकेनिकल, केमिकल, मेटलर्जी के सब्जेक्ट होंगे जिनमें हमारे ओरिएंटल कोर्सज के अंदर उसकी डीटेल्स होगी और जब उनको पढ़ने का विषय आएगा तो संस्कृत के जानकार पुनः उस व्यक्ति के लिए जो उधर काम कर रहा है, तो वो फर्स्ट ईयर नहीं, अगर वो उस पर रिसर्च करना चाह रहा है तो उसके लिए यह भी आवश्यक हो जाएगा कि कम से कम तीन महीने का एक संस्कृत का कोर्स भी करें। उसमें भी क्रेडिट पाए। मल्टी-डिसिप्लिनरी, विषय अपने आप में सबकी जानकारी में है। मल्टी-एंट्री. मैं कहीं से ग्रेजुएशन करू, लॉयर बन चुका हूँ और ट्रिपल आइटी के अंदर पोस्ट ग्रैजुएट करना चाहू, ये फ्रीडम भी आपको देनी पड़ेगी। जैसे खड़गपुर में लॉ पढ़ा रहे हैं। जी हाँ. इंजिन भी किसी ना किसी प्रिंसिपल्स पर काम करता है, और वो लॉ है उसका। ये अलग बात है कि हम उसको मैकेनिकल लॉ कहते हैं, और जब बुद्धि के ऊपर आता है तो साइकोलॉजिकल लॉ कहते हैं। और साइकोलॉजी के अंदर ही फिर क्रिमिनोलॉजी आ जाती है। और ये क्रिमिनोलॉजीस फिर से इथोस पे डिपेंड कर रही हैं तो ये इटर-डिपेंडेंसी जो है। बंदूक बनाएगा वो इंजीनियर मैकेनिकल या आज की तारीख के अंदर ऐसा बेड बनाएगा कि जो इम्प्रूव करेगा किसी रोगी को उसको जितने पल है, जितने उसके पीठ के ऊपर बल है, जितनी रीढ़की हड्डी जैसे हैं वैसे वो फ्लेक्सिबल हो सकेगा बेड, यह व्यक्ति के अपने वैल्यूज पर डिपेंड करेगा। मल्टी-मोड, मल्टी- एग्जिट, मल्टी-एंट्री, मल्टी-लिंगुअल

इतने विषय सामने रखे जा चुके हैं। लैंग्वेज अपने आप में एक सब्जेक्ट है जितनी लैंग्वेजेस है उनके बारे में तो विषय आ ही गया। ह्यूमन-वैल्यूज के साथ एक चीज बहुत तेजी से जुड़ी हुई है, किताब का नाम आ चुकी है. ए. एन. त्रिपाठी जी का नाम आ चुका है, वो है प्रोफेशनल एथिक्स । रामकृष्ण मिशन की तरफ से बात आ चुकी है why we work to learn to serve the society नर-सेवा, नारायण-सेवा की और वो ले के जा रहे हैं। ये अटिट्यूड टु वर्क है। मेक वर्क योर बीन फॉर इनर स्प्रिचुअल रीबर्थ, इसको कहने से रुक गए। जब आत्मा और परमात्मा एक हो जाते हैं और तब जो कार्य किया जाता है, तब पूरी की पूरी प्रकृति एकात्म हो जाती है। उनके लिए रामकृष्ण मिशन की भी आवश्यकता है. गायत्री परिवार की भी आवश्यकता है। खैर आपके यहाँ ही किसी इंस्टीट्यूट में में देख रहा था ध्येय वाक्य है- योगः कर्मसु कौशलम। इसका मतलब क्या होता है? योग उसको हम योगा कहते है। योग प्लस जुड़ना is skill in action. इसके लिए मैं ह्यूमन वैल्यूज से आगे चल रहा हूँ और ये शब्द ए. एन त्रिपाठी जी ने यूज किया है, pursuit to excelle हम, तो मैं अभी भी मजीवे पर ही हूँ। रीजन क्या है? आज इसकी अत्यंत आवश्यकता है- मानव के लिए भी स्पिरिचुअलटी के लिए भी और कमर्शियलटी के लिए भी। केवल मैं लाभ उठाऊंगा इसके लिए जीवन नहीं हो सकता। प्रोफेशनली इथोस और इथिक्स अपने आप वहाँ आती है। मैं केवल एक sample दूंगा अभी हर छह महीने में एक खबर आ जाती है वोक्सवैगन ने अपनी गाड़ियां, उनके 100 ब्रेक फेल कर गए, नयी गाडी के, तो उन्होंने 10,000 गाड़ी विड्रा कर ली। होंडा, स्टिरिंग में कहीं जाम था, उन्होंने एक लाख गाडी वापस मंगवाली ये एथिक्स है। ये कमर्शियल एथिक्स है। मंगाना ही पड़ेगा। लेकिन इसका दूसरा पार्ट भी है। दुनिया में सबसे बड़ी Ranbaxy थी अपने आप में फार्मसूटिकल इंडिया के लिए एक बहुत बड़ा नाम था। लेकिन मित्रों एक विसिलब्लोअर जिसके लिए जीवन में आदर्श प्रोफेशनल मी ICS पहले नंबर में आई he made a complaint यहाँ जी टेस्ट होते है, इस दवाओं के वो मैनेज्ड है, कितना बड़ा बवाल हुआ, आज तक क्या स्थिति चल रही है, ये आपके सामने है। ए एन. त्रिपाठीजी की किताब में भी एक sample है Bay Area Rapid Transit metro की बात थी। BART उसको कहा गया था। उसमें जो ऑटोमेटिक सिग्नल था उस ट्रैक पर उस रेलवे पर उसमें कुछ गडबड थी। तब क्वेश्चन बोर्ड ऑफ डायरेक्टर के सामने आया, उसे रहने दिया जाए, या अभी withdraw करके कम्प्लीट्ली दोबारा से रिव्यु करके उस डिफेक्ट को रिमूव करके तब किया जाए? मैंने केवल एक सब्जेक्ट, टेक्निकल को नॉन टेक्निकल मानते हुए कंपलसरी माना है और वही मैं लेकर गया एक sample के साथ जहाँ इस सत्र की शुरुआत हुई थी। अब मैं केवल टच करूँगा, बोलूँगा सब्जेक्ट्स अपने आप आपके बीच आ जाएंगे। प्रकृति, प्रकृति का संरक्षण-संवर्धन एनवायरनमेंट प्रोटेक्शन, प्रिवेंशन एंड कंट्रोल ऑफ एयर पोल्लुशन, प्रिवेंशन एंड कंट्रोल ऑफ वाटर पोल्लुशन एनवायरनमेंट एक्ट, ग्रीन ट्रिब्यूनल बन गया है। केवल यूकेलिप्टस के 150 पेड़ थे जिनको लेकर Godavarman का केस शुरू हुआ और जंगल को बचाने को लेकर के एक लाइब्रेरी भर करके ऑर्डर्स हुए, और तब जा करके ग्रीन ट्राइब्यूनल एक्ट पास हुआ। सुप्रीम कोर्ट का ये अलग ही डेवलपमेंट है, तीन सेक्शन का एक्ट है, फारेस्ट कन्जर्वेशन एक्ट जंगलों को बचाने के लिए अपने आप में गजब का एनएक्टमेंट है। Scheduled Tribes and other Traditional Forest Dwellers Rights- जब भी हम फॉरेस्ट की तरफ बढ़ते है तो वहाँ पर रहने वाले जनजाती है, जिसका पूरा डिपेंडेंस है उस फॉरेस्ट के उपर है उसके अपने कुछ राइट्स है जिनका सेफगार्ड उन माइंस को भी करना पड़ता है, और उन इंडस्ट्रीज भी करना पड़ता है। आइये अभी फार्मर लॉ के ऊपर और एक बहुत गजब की बात हुई। एक आंदोलन चला, लेकिन उसके पीछे एक और क्रांति हो गई लेबर लॉ 1947 से पहले लेबर कमीशन बना था, अम्बेडकरजी ने बनाया था. जब वो लेबर मिनिस्टर थे इंडिपेंडेन्स से पहले Payment of wages act आदि कानून उसी समय के बने हुए है. इन्क्लूडिंग इंडस्ट्रीज डिस्प्यूट । 2019 और 2020, जो 1991 में कहा गया था कि लेबर रिफॉर्म की जरूरत है, वो सब 2020 में हुआ है। हर इंडस्ट्रीअलिस्ट को उसको जानना अत्यंत आवश्यक है। सब्जेक्ट क्या दृश्य है उसमें? Industrial relations. Labour and social security. Occupational safety Health and working condition, Code of social security Code of wages- इसके बाद एक सबसे important part जो शुरुआत होती है बिजनेस की बिजनेस ऑर्गनाइजेशन इंडिया में एक अलग तरह की चीज है. बड़ी से बड़ी कॉर्पोरेशन भी अपने आप में हिन्दू अनडिवाइडेड फैमिली

है। I am not wrong टाटा हो या बिरला हो, कही ना कही फैमिली आ ही जाती है, उनके झगड़े भी आपके सामने है। Reliance हो, Ambani हो आपके सामने है उनके झगड़े भी। यहाँ फैमिली की अपनी importance होती है और हमारे यहाँ उसको माना जाता है संयुक्त परिवार हिंदू अनडिवाइडेड फैमिली आज भी कवर करती है। जी हाँ डालमियाज की ग्यारह पत्नियाँ थी। ग्यारह पत्नियाँ और उनके बच्चे सब एक ही बिजनेस में लगे हुए थे। डालमियाज आज भी फेमस है। भारत के इन्डिपेन्डन्स के समय पे भारत इलेक्ट्रॉनिक्स, इलेक्ट्रॉनिक्स नाम था. भारत एयरलाइन्स, भारत बैंक, भारत नाम से कराची रावलपिंडी से लेकर और कलकत्ता तक इंडस्ट्रीज थी तो क्या कॉर्पोरेट स्ट्रक्चर अपने आप में हर टेक्निकल आदमी को जानना आवश्यक नहीं है कि क्या उसका कानून होता है, बिजनेस आर्गेनाइजेशन कैसे बढ़ता है? सोल प्रोप्राइइटरशिप फर्म भी हमारे यहाँ होती है और पार्टनरशिप फर्म भी होती है। लिमिटेड लाइबिलिटी भी अब शुरू हो चुकी है और कंपनीज एक्ट तो आप जानते ही हैं, 1956 में भी पास हुआ था, 2013 में भी पास हुआ था। चार्टर्ड अकाउंटेंट, कॉस्ट अकाउंटेंट के बिना बिजनेस चल ही नहीं सकता। क्या उसका नॉलेज, अगर मेरा मन है तो मुझे नहीं होनी चाहिए एक और चीज है, सब जानते हैं multidisipline लेकिन आपका जो IIIT है इसमें सैनिटेशन भी है. इसमें हेल्थ के लिए डिस्पेंसरी भी है, इसमें इलेक्ट्रिसिटी भी आती है. इसमें एजुकेशन भी आती है, प्राइमरी का स्कूल भी आता है। ऐसा ही हर इन्डस्ट्रीअल इस्टेब्लिशमेंट में होता है इसलिए टाउन डेवलपमेंटशिप अपने आप में एक नॉलेज है, एक स्पेशलाइजड सब्जेक्ट है। क्या सिविल इंजीनियर को अगर वो इस कोर्स को भी करना चाहता है तो नहीं करना चाहिए? My feeling is yes- Intellectual property, Copyright हम लोगों के लिए छोड़ दीजिये जो लिखने पढ़ने वाले लोग हैं, रिसर्च करने वाले लोग हैं. sorry I am not making any comment about degradation and validity of it As everyone knows copyright violation बहुत जोर शोर से रिसर्च पेपर्स में होता है और हम अभी भी ऐसा कर रहे हैं। Trademark, patent designs एक पार्ट है। Semi & Conductors, Integrated & Circuits, Layout & Design अलग पार्ट है। Protection of plant variation and Farmers Rights एक अलग ही फार्मर्स का राइट प्रोवाइड करता है। तो Biological Diversity अपने आप मे कुछ और ही है and last but not least बासमती चावल या ढाका की मलमल या बनारसी साड़ी या इलाहाबाद का अमरूद, लखनऊ का खरबूजा। ये geographical indications of goods अलग ही सब्जेक्ट है। माशेलकर जी ने इसी पर यहाँ पे आकर काम किया था। अब आ जाइये मेरी फील्ड पे मेरी फील्ड है grievance settlement committees. हर इंडस्ट्री में जरुरी है, जब किसी इंडस्ट्री की नब्ज देखी जाती है तो देखा जाता है कि इसमें कितने मुकदमे है। लेबर लॉ की क्या पोजीशन है. युनियन के साथ कितना झगड़ा है? तब उसका Amalgamation और ट्रासफर देखा जाता है। तो grievance settlement अपने आप में एक स्पेशलाइजड फील्ड है तो सोशल वेलफेयर का वो काम क्यों ना किया जाए। आइए वो नाम मैं केवल लेता हूँ, जो आज जरूरी हो चुके हैं, हर कानून में है, हर बिजनस में है, और वो है arbitration, mediation, conciliation, labours ki special tribunals, other special tribunals, commission act, competition act] commercial course, consumer forum, lok adalat Choice is yours. कब कहाँ किसको कितना पढ़ना है, ये उस पर भी छोड़ा जा सकता है और academic भी छोड़ा जा सकता है।

Dr. Santanu Das Gupta

Reliance Senior Vice President, RIL, Mumbai

- FAP program provides an excellent opportunity and flexibility to student to undertake specializations in multidisciplinary courses based on their interest and convenience. The provision of single entrance, multiple exists, re-entry, lateral entry and certification.
- On conditional fulfilment of minimum credits makes the program more interesting to students.
- However, the re-entry and lateral entry should be clearly defined for each stage of the program. The credit completion, transfer provision should be provided for each entry.
- Control/regulator committee and student counselling cell should be established for monitoring the progress or addressing any issue of the students.
- In the program the timeline is rigid hence more focus should be given to practical's, industry interaction, and internationalization, if required some credits/course work can be minimized.
- The students should be inducted for developing research mindset from 4th year of degree program itself. Frequent evaluations and sufficient time should be given to PhD degree candidates (> 2colloquium/research monitoring committees).
- Fellowships, international student exchange programs, training on entrepreneurship and job assistance should be ensured to attract for the FAP program.
- The FAP governing body should be a blend of industry and academia for balanced and holistic development. The miscellaneous group of subjects should be clearly defined and needs to be extended for inclusion of other specializations or areas.

Dr. Chinmay Pandya

Pro. Vice Chancellor

Dev Sanskriti Vishwavidyalaya, Haridwar

The eight year Flexible Academic Program (FAP), proposed by Indian Institute of Information Technology Allahabad (IIIT-A), Prayagraj, is an extremely innovative initiative, that encompasses almost all the aspects of academic training, that is needed for a student, wishing to pursue a career in the field of Information Technology.

The mandatory inclusion of Non-Technical / Miscellaneous / Value Based courses, in every semester of the FAP, is definitely a very welcome step. Besides providing knowledge about Non-Technical fields (humanities, business, etc.), these courses will also give an opportunity to the students to explore various life management tools and techniques, which will be useful in ascertaining their all-round development, and transforming them into worthy global citizens.

We are really thankful to IIIT-A for inviting us to be a Participating Institute (PI) in the FAP, and for providing us an opportunity to share our views on the inclusion of Non-Technical courses in the FAP. In this regard, we would like to share the example of Dev Sanskriti Vishwavidyalaya, Haridwar (DSW)

(www.dsvv.ac.in), as a working academic model, that includes value based / non-technical courses in technical academic programs, ever since its establishment in 2002, i.e. for the past 19 years.

Dev Sanskriti Vishwavidyalaya, Haridwar (DSVV), is an outcome of the divine vision of noted saint scholar-philosopher Pandit Shriram Sharma Acharya ji, the founder of All World Gayatri Pariwar (www.awgp.org). Acharyaji had great expectations from the youth. He used to say with extreme confidence that if the consciousness of the youth could be enlightened, we would readily usher in the new era of peace and harmony. He used to be filled with joy when he visualized the future based on the potential and capabilities of the youth. He had envisioned a University where truthful, great and divine human beings could be created, who would be devoted to uplifting the humanity. DSVV was established with this noble vision, which is aptly reflected in the first two lines of its efter

मानवी उत्थान का जो अनवरत आधार है। देव संस्कृति विश्वविद्यालय सृजन का द्वार है।।

The Vision of DSVV states: 'unite contemporary education with spiritual training to cultivate well rounded, competent and personally uplifted graduates, who possess a scientifically grounded understanding and experience of spiritual transformation, and a powerful drive to use their gifts to promote the greater good of society'

The Mission of the University is as follows:

1. Confluence of traditional education with science and spirituality
2. Creation of devoted, righteous and learned students
3. Infusion of scientific spirituality into life style
4. Creation of citizens well-endowed with nationalistic ideals
5. Guiding future leaders by developing human values and oneness towards all
6. Conducting conventional research in non-conventional disciplines In addition to offering undergraduate, post-graduate, doctoral programs in wide array of subjects such as Yogic Science and Human Consciousness, Psychology. History and Indian Culture, Theology, Computer Science and Application, Animation, Ayurveda and Holistic Health, Tourism Management, Mathematics, Rural Entrepreneurship and Development, Environmental Science. Life Management. Scientific Spirituality, Languages, Education, Journalism and Mass Communication, etc., the University specializes in the character development of its students through fostering an uplifted lifestyle based on spiritual practices.

The result is well-rounded and dynamic graduates who wish to channelize their skills towards serving the needs of the society. The academic structure of the University is divided into four Schools.

1. School of Indology includes the Departments of Yogic Science and Human Consciousness. Ayurveda and Holistic Health, Complementary and Alternative Medicine, Vedic Studies and Sanskrit, Hindi, History and Indian Culture, Indian Classical Music

2. School of Humanities, Social Sciences and Foundation Courses includes the Departments of English. Education, Psychology. Life Management, Scientific Spirituality. Theology and Divinity

3. School of Technology, Communication and Management includes the Departments of Computer Science, Mathematics, Tourism Management, Journalism and Mass Communication. Animation and Visual Effects.

4. School of Biological Sciences and Sustainability includes the Departments of Medicinal Plants. Environmental Science, Rural Studies and Sustainability Undergraduate students, pursuing technical pre-decided pool of courses, that also include Miscellaneous / Non-Technical / Value Based courses, ademic programs, have to select Generic Electives (GE) and Skill Enhancement Courses (SEC) from available at DSVV. This is similar to the format proposed in the FAP. A course on 'Life Management' is a

compulsory 2 Credit course (including both theoretical and activity based sections), in every semester of every academic program of DSVV. Well structured syllabi are available for each semester of certificate, diploma, graduation, postgraduate diploma, and masters programs; it is also a compulsory course in the A one month Social Internship, having duly assigned Credits, is also a compulsory part of every academic course-work for Ph.D. students.

Besides this, DSVV is a completely residential University, having a pristine Spiritual Environment, with a program. daily routine that includes Prayer, Meditation, Yagya, Japa, Yoga, etc. in the morning, playing of inspirational songs and Naad Yoga (music meditation) in the evening, and a healthy and satvik diet. All these things together lead to the character development of the students, and result is well rounded and dynamic graduates.

DSVV would be readily willing to share this experience in the development of the FAP, and contribute as much as possible as a Participating Institute.

Swami Atmashraddhananda

Ramkrishna Mission, Kanpur

Abstract of the speech delivered during 1st National Conference

हम कैसे जीवन मूल्यों को अपने जीवन में उतार सकते हैं यह बड़ा महत्वपूर्ण है। चाहे कोई व्यक्ति तकनीकी क्षेत्र में हो या अध्यात्म के क्षेत्र में या वह एक साधारण जीवन जी रहा हो मूल्यों का तो बहुत ही बड़ा महत्व है। मैं इस संदर्भ में एक छोटा सा कहानी बताता है- 'एक विद्वान पण्डित थे, उनको कही जाना था, वो एक नौका से जा रहे थे। जब वो नौका में बैठे थे तो अपने विद्वता को नाविक से प्रदर्शित कर रहे थे। उन्होंने नाविक से पूछाः 'तुमने कुछ पढ़ाई भी किया है या केवल नौका ही चला रहे हो?' कुछ वेद शास्त्र का अध्ययन किये हो? नाविक बोला 'साहब में गरीब आदमी हूँ। मैं अपने रोजी-रोटी में लगा रहा। मैंने कोई पढ़ाई नहीं किया है।' पण्डित जी बोले 'तब तो तुम्हारा एक चौथाई जीवन बेकार हो गया।' वो नाविक चुप रहा। पण्डित जी ने फिर प्रश्न किया 'क्या तुम संस्कृत व्याकरण जानते हो ?' नाविक बोला 'जब मैं पढ़ा ही नहीं तो व्याकरण क्या जानू' तब पण्डित जी फिर बोले 'अब तो तुम्हारा आधा जीवन व्यर्थ हो। गया।' इस वार्तालाप में नाव नदी के बीचो-बीच जब पहुँच गयी थी। तभी मौसम बदला और आँधी में नाव डगमागाने लगी। अब नाविक पण्डित जी से पूछा 'क्या आप तैरना जानते हैं? आँधी में नाव डूब जायेगी। तब तो आपका पूरा जीवन व्यर्थ हो जायेगा।' यह कह कर नाविक नदी में कूद गया और तैर कर किनारे पहुँच गया और पण्डित जी डूब गये।' जीवन यह कहानी हमे यह शिक्षा देती है कि जीवन में कौशल कितना महत्वपूर्ण है केवल किताबी ज्ञान से। केवल पुस्तकीय ज्ञान से जीवन के चुनौतियों को नहीं साधा जा सकता है। इसके लिए जीवन कौशल की आवश्यकता होगी। मैं यूनेस्को की एक रिपोर्ट द्वारा बताए शिक्षा के चार स्तम्भों को संदर्भित करना चाहूँगा- 1. जानने के लिए सीखना, 2. करने लिए सीखना, 3. जीने के लिए सीखना, 4. बनने के लिए सीखना। उपरोक्त शिक्षा यह बताती है आप सबसे अच्छे कैसे बन सकते हैं। आप किस तरह के व्यक्ति बनते हैं ? क्या आप के मन में निःस्वार्थ भाव है ? क्या आपके हृदय में दूसरों के प्रति प्रेम है? इसके अलावा जीवन के चुनौतियों को कैसे दूर करें। बच्चो को अपने तरीके से पढ़ने का प्रयास करने देना चाहिए। हमें उन्हें बताना चाहिए कि प्रमाणिक तरीके से सीखते कैसे है? यह उनकी एकाग्रता में सुधार करता है, ध्यान की शक्ति में सुधार करता है। विचारों को सदा करता है। कठिन परिस्थिति का सामना करने का गुण विकसित करता है। लेकिन इस तरह का पाठ्यक्रम बनाना अपने आप में एक चुनौती है। इसके लिए कई लोगों को मिलकर कठिन परिश्रम करना होगा।

मुझे आशा है कि इस पैनल चर्चा के अंत में महत्वपूर्ण संस्तुतियां देश को प्राप्त होगी, जो स्वामी विवेकान्द के शब्दो में 'आदमी बनाने की शिक्षा' साबित होगी।

Prof. C. C. Tripathi

Director NITTR, Bhopal

Abstract of the speech delivered during 1st National Conference

From the topic, it implies that we are talking about the multidisciplinary research universities (MERU) in particular. But, it come it was evolved after the discussion that MERU is not a name for the multidisciplinary institutions, but program itself. We are talking about a UG program in particular that has to be in the multidisciplinary nature. And there was suggestion that when we happened to design the flexible academic programs in the many multidisciplinary research universities, maybe the UG program, we have to keep it in our mind that the courses which are probably liberal art, that should not remain under periphery. It should tamed the bulk of the education, the program which may be bachelor of technology or Master of Technology, what could it be? Besides this, there was more apprehension that there should be a strategy adopted so to keep a balance between the subject's specialization and other interdisciplinary courses while designing the flexible academic program for the MERU institutions. There were some suggestions regarding how to go about for the multiple research education programs. Well, whatever that we had to extensively use the technology, right, from the beginning of the admission examinations, evaluation, academic discoursement, facilitation, and so as to democratically provide the digital education to all and everywhere. So these were the two suggestion along with this we have already discussed that provisions for creating the transfer of credits, provisions for creating the consortium of institutions, so, as I should say that we have been discussing that the virtual institutions to provide the degree and the recognition of such kind of credits and degree. So this is from my side.

Prof. P. K. Jain

Director, NIT Patna

The National Education Policy 2020 states that, 'HEIs will play an active role not only in conducting research on disruptive technologies but also in creating initial versions of instructional materials and courses including online courses in cutting-edge domains and assessing their impact on specific areas such as professional education. Once the technology has attained a level of maturity. HEIs with thousands of students will be ideally placed to scale these teaching and skilling efforts, which will include targeted training for job readiness.' The Flexible Academic Program framework is capable of achieving these desired goals as it has created a great opportunity of involving multiple institutes over an innovative interface. The NIT Patna has been continuously working with IIITA Prayagraj in development of FAP. The Senate of the institute has also affirmatively nodded when preliminary discussions took place about FAP. I am sure that in near future NIT Patna will undertake FAP pilot run in line with what IIITA Prayagraj has done. I wish all the best for success of FAP.

Prof. N. V. Ramana Rao

Director, NIT, Warangal

Abstract of the speech delivered during 1st National Conference

Most of the balances are quite fine, but not yet to do how much of it is really immediately implementable, for example, flexibility, and whether the students can break the details and the timings, whether the students return test by using the courses which they want. Is it possible so easily, whether the truth can design their own list? so all these things are still not very clear, but as suggested by the leaders, also, they have a better plan that expandable to large scale of students, so let the man probably have to be coming out with other difficulties implemented here, then we can find lines and farm license the role, temperatures and everything that actually has a honor and books into the whole system is not the way of course, we have now tried to families, but we already done, but we already wanted to try to. We have somebody said, you know, after one year, whether the degree are the visit really useful, so what we have done that analysis of the first year of study, we are giving a one year saturday programming engineering but we find, we believe that very few people will be there would like to go out of her, one year after two years of study, we will diploma, we will be able to give and but i am not going to do the homework. I really workout in the long run, but yes, we have started preventing minors and majors so that the selection of courses from different issues, we already have the canadian bank of credits poured by the government, they're the selection of children should be based on the national level screening test for this, because you have to see rarely whether students can complete these courses, and what of the employment of the students and the end of the program, how they will be actually responding to the one of the concerns that i have to thank you. yeah, thank you. professional, in fact, this suggestion, which we have given, we have also gathered such type of valuable solution from all my experts, and then will be going to tackle one by one annual subscription on that participation is given by other experts now going ahead.

Prof. K. K. Shukla

Director, NIT, Jamshedpur

Abstract of the speech delivered during 1st National Conference

I was listening to the speakers and on this aspect of flexible academic program yes must congratulate IIITA for taking this initiative. It's very easy to say but it is very difficult to implement so hope that this deliberations will show some light on implementation part right now what we are living if talk about the NIT system mostly I'm not talking of the IT system they have little flexibility but in NIT some other tier two tier three colleges if I summarize in one word we are having the right type compartment. The aim is to have the tight but light compartment. I would like to begin with a quote a student says that I cannot understand what you teach sir would you like to teach the way I can understand? So this would be the whole philosophy of the teaching and the academic program and flexibility is the answer but of course there should be caution in implementation. We talk about the multidisciplinary approach, we talk about the electives, we talk about the credit transfer so on but if you

see and you go on implementing have the experience at NIT Jamshedpur will say in a couple of minutes that when we are going for the course revision for different courses people say if I take the example of soil engineering or mechanical engineering the core courses core branches people say that if I don't take this subject ESC cannot be a complete, stable or mechanical engineer so there is always that we have a credit that should not exceed it should be limited to 160. I was going through the draft credit prohibit also so it's well made, well documented that we have the credits. What I feel that in flexibility if we go for we can make a basket of different branches say for example civil, mechanical, metallurgy production and industrial and so on. One basket another is the electrical, electronics and communication, computer science, IT, engineering, physics and so on. So we can have different baskets in these baskets to maintain the flexibility. What we can have we can have for example one sub basket of courses containing humanities Sciences, considering physics, chemistry, mathematics, environmental Sciences and some courses of the programming as the basic courses basic process that may differ. For the civil engineering story, we can say the infrastructure or mechanical Sciences and the communication of the electronics. Both have to read. But that may be different, and of course we can offer some field courses related to the branch. Now this should maintain at least say for example under 20 credit. Now depending upon what the Professor Larry was given the example of train that a student has to go one destination to other destinations depending upon his choice. So we should leave this flexibility to the students for opting elective courses as for their choice. So if we want to implement the flexibility we can have say that for acquiring a degree this is the minimum number of grated anything. After deliberations one can decide but above this depending upon your own interest because ultimately the interest of the student has to be solved that we can offer the electives Anyone can take, say student A takes the 20 credits. Additional student B can take 17 credits or 15 credits up to a minimum to maximum credit. So depending upon the requirement or interest, the student can take the credit as form of elective courses. Now the real problem is with the implementation because most of the institutions they are having lack of the faculty members. So what actually happening? We give the electives, but we force that you have to take these electives. So in practical, if the flexibility has to be implemented, then definitely we have to take the help of the faculty members from other institutions and that the credit transfer. This philosophy of the credit transfer are having the courses online more from different institutions or from Soyama moks platform online platform that can serve the purpose. Then somehow we can implement the flexibility. Another aspect that mostly in engineering in tier two or tier three. I've seen that we may mostly focus on the theory but little bit experience on the practical and most of the experiments labs are on demonstrative type that you go and you don't have the prototype, you have the model the teacher or the instructor demonstrate. You go away, write the things and go away, write the stuff and go away. So there must be some sort of you can say courses which we can do like this learning by doing that there should be certain lab classes that whatever you want to do it must Give this flexibility to the students. Let's suppose you are studying a particular branch and you have something in your mind you want to do it. We'll provide you the opportunity to go to the lab, pursue a passion and come up with some product or something. That's what we can inculcate this open lab type of concept. In fact, apart from the traditional one, in each and every program we can have the open lab concepts where the student can pursue his passion apart from doing projects. So this is one thing which may mind another thing that we have to focus on the emerging technologies or the current technologies. For example, we are going to implement a course here. That's what IIT Delhi has already started. We are also going to start at an item engineering, mechanics and competition. We have disrupted this course as multidisciplinary approach. That how to use machine learning and mechanics, how to use artific intelligence in mechanics. That's all how to use the data analytics or data structure in the mechanics that's what this type of course is where not only will be teaching the basic courses of the mechanics, solid,

fluid or bio, we will also integrate it with the current technologies. So that should be the one way where we can have the multidisciplinary approach, Right now someone was saying that NIT company, they have the courses on the economic sides. So how we can integrate the economy with the technology, I think that can be a great sense. That can make a great sense. So these are some things if we want to pursue, infact flexibility in real sense, we have to think as far as the academic institutions are concerned. I would like to summarize that the course curriculum that has to be though it is there, it has to be learner centric Considering the interest of the students apart from the normal pedagogy, we have to go for the concept of open labs where the students can pursue. We should also incorporate more electives in addition to the basic requirement of the degree where the student can pursue if the facilities or level at the Institute or what has taken the lead to find form a consortium that we can take such institutions where the faculty or facilities available in other institutions, students can take help of that Institute or facility or faculty of other institutions are online mode and can pursue that course to be evaluated by the other issue or at the host Institute itself.

Prof. K. Chidananda Gowda

Former Vice Chancellor, Kuvempu University
Senate Member, IIITA

It is heartening to note that IIITA, Prayagraj will be initiating the Flexible Academic program from the academic year 2022-23 and will be admitting 50 students under this. The Education System has moved from the Teacher centered one to the School-centered, and then subsequently to the present Learner-centered system in the 21st century. This is according to the vision of NEP 2020 which highlights the Learner-centric flexible education system enabling students to select subjects, schools, training, and periods of Earning and Learning according to their interests, conveniences. and responsibilities. The possibility of choosing multiple exits and entry points enables the students to move seamlessly between Earning and Learning. The possibility of choosing major and minor modules is very useful in catering to the multiple interests of learners.

I am aware of the leading initiative taken by the Director and Professors of all the Departments of IITA for the past couple of years to develop a flexible system to suit the background of their Institute keeping the vision of NEP 2020 in the foreground. I am glad to see that Dr. Neetesh Purohit is taking a leading role in formulating the FAP under the NEP 2020 and implementing it successfully. I heartily wish all the success to IIITA in implementing FAP successfully. I am sure that this new educational venture of IIITA will also inspire many other and universities to start new programs like this and reach greater academic heights.

Prof. Lalit Awasthi

Director, NIT, Uttrakhand

Abstract of the speech delivered during 1st National Conference

I thank the organizer for giving me opportunity to be here. So very good discussion and the initial talk, and do agree with what Prof. Rajat Moona has said. We have done some work in earlier was in NIT Jalandhar and here in NIT Hamirpur also. We have allowed the exit and entry and to that certain extent the things are quite similar as has been discussed earlier also. We have kept a minimum number of credits to be earned for an exit and we are proposing a similar structure in the curriculum also that the student can take the courses. In first year, we have some branch specific courses, so that the certificate course can be useful, that is there. Second is that how about the acceptability after certification and after getting a diploma, post diploma? What we have done is for an exercise, the three NITS-NIT Sikkim, NIT Jalandhar and NIT Hamirpur we have with informal MoU kind of thing that we can allow the student from one NIT to exit and enter in another NIT if the seats are available if he bears the minimum credits. So that kind of thing is there in which we allow the entry exit even after first year, second year and 3rd year also because the requisite number of credits have been earned by the student in their respective NITS. And because they are coming from the same kind of entry, then we are allowing them to enter in our institute also. The flexibility which has been again created at M.Tech and even at the research program level also. We have their work is say cases one or two cases where the students have opted for and we have started with giving them Diploma, Advanced Diploma. Now as far as their employability is concerned, definitely this is a new, totally new scheme where now these students are exiting maybe after one year, two year. For first year, the certification we have kept around 30 to 40% of the credits they should earn and for having a post diploma after two years or three years, then the student must earn 60 to 70% credit. So these employability definitely because it will be only checked when these students are out and they opt for some kind of employability and the other inputs which we have tried to do at our institute is that we are trying to unify with the this scheme and the credits with the IITs, NITS, IIITs so that these students can have because at Hamirpur we are having roughly 180+credits for B.Tech. Whereas usually in IITs, we see 125 to 130 credits are there so we are in process of modifying and putting the inputs from various streams, including art, science, law, these courses are also being quote in this scheme. And so this is what the experiment we are doing at NIT Hamirpur and few of these students have taken exit, their employability or their reentry is yet to be because they are going to just be there in the market soon. So that is what I think if we need to totally implement it then there need to be a consortium of institution, they should be able to accept the input and output of these students from the other institution that kind of consortium can be made. Like NIT Hamirpur we can always look for any student who exit from any NITS, IITs or maybe IIITs, they can enter the institute provided we have sufficient number of seats available or there is a provision made for such seat maybe 10-20% extra seats for student to enter or exit. So I think that is that's all from my side at this stage. Later on, I will join. Any queries or questions, please. Thank You.

Prof. Rajeev Tripathi

Former Director, MNNIT, Allahabad

Abstract of the speech delivered during 1st National Conference

Prof. Nagabhushan, who is chairing this inaugural session, Prof. Neetesh Purohit, Shri Kothari ji, Prof. Chaturvedi ji. Prof. Agarwal, Dr. Mittal, and all other my distinguished colleagues from different institutions. Yes indeed, as has been said that there are challenges and it is a good initiative, which has been taken up by IIIT Allahabad and we need to design this Flexible Academic Program very cautiously. Number one, the entry point, because any student who is preparing hard for one year or two years, for getting entry through JEE Mains, JEE Advance. The basic target is to complete the degree, don't think that there will be a very very small percentage, which will be there who will be leaving the program in between, especially towards the institutions like IITs, NITs, and IIITs. So, lot of deliberations were going on and the step is in between that multidisciplinary, lot of courses from moral ethics, social values, law, constitution, music, they need to be integrated into the program, plus the specialization which that student is opting for that is also coming up, and on the other side, we say that less loading per semester, gives the time for creative thinking, creativity. And on the other side, every department, every discipline talks about that well if this is the course which is not taught, missed, in this discipline, this course is very relevant, very important. Nobody's ready to leave the course. So, there is a lot of debate which is going on in my institution, and I'm sure that in other institutions also the similar kind of situation must be there. So, in between having said all these challenges. In between, we have tried to come out with some kind of flexible structure model with multiple entries, multiple exits and I'm sure that during these two days of deliberations, we will focus it, discuss it and come out with the model which will be a modern curriculum and of course, the institutions are free to put something in between and make them as per their own requirement of the institution. The second thing is on this National Credit Bank that is also a good idea and IIIT Allahabad has taken a lead in that by making an attempt to create the consortium of the institutions of ten fifteen institutions, where the exchange can take place. So, I'm confident that during coming two days today and tomorrow, we will definitely at the end of the day you will come out with certain good model, which can be further deliberated at different forums.

All the stakeholders should be taken into confidence and as said in the morning session that after incorporating the changes I'm just taking whatever Prof. Desai and Prof. Tiwari has just now said just taking it step forward that students are one part another part is whatever deliberations has have taken place over the two days that should be incorporated in your draft that should be circulated let it be deliberated in the respective senates to have the confidence of the faculty because overall it's faculty who is going to implement it effectively and faculty should also know what exactly and how exactly we are planning along with the students participation and as has been suggested initial point for the start of the program consortium like IITs with mentoring institutions around them yes that's also a good idea to start however a lother levels also that can be explored and implemented problems will be there as said earlier also that initially in the initial phases the problems will be there some kind of logistics problem or some kinds of implementation issues but we need to look at it collectively and resolve the issues with full determination then only we can push forward this noble idea and go for the effective implementation of this NEP 2020 course design evaluation pedagogy all those things needs to be revamped and at all levels faculty students industry those who are a real taker of such students they should also be taken into consideration once again i congratulate IIIT Allahabad under the leadership Prof. Nagabhushan and the efforts made by Prof. Neetesh Purohit and his team for bringing out this least something has started coming this has this will be serving as a reference point for further deliberations so we have to start means whatever problems will be there that we will take care of it we are capable of with these eminent people here we are capable of resolving those issues and but we have to start now with the coming session 2022-23.

Prof. Swati Patankar

IITB, Mumbai

Abstract of the speech delivered during 1st National Conference

I'll be very brief and will give a flavor of what we have been trying in IIT bombay and will also perhaps give a flavor of them constraints so some of the issues that we faced because of course that you know nothing is smooth sailing as we all know so i'll start off by telling you know by saying why is this flexibility in the national education program something which is very essential for student sum. I'll give the example of my own institute as you very well know many of the undergraduate students the B.Tech. students, many of them stay in their core disciplines of engineering if they happen to be from computer science they definitely stay in that in that discipline as they move ahead in their careers and in fact this is very much related to the employability opportunities right so you know they have their very practical reasons for wanting to continue in a particular discipline or no thowever there are enough students who do not stay in their core disciplines in our institute and they move to other disciplines and now a days we are also seeing that many of the students move into entrepreneurship because this is something which is being encouraged a lot and it's really a very exciting new angles when or in different options and we know that they are possibly going to choose some option later on which will be a much better fit for their interests and their personalities right so think flexibility is key for the student sum. I agree with the discussion that has happened previously that it's very important for the students but it's very difficult to convince the faculty because in fact you know i'll give you examples of this as I explain what sorts of things we've been doing the faculty are not always that open to having highly flexible um academic curricula so how does one actually try to convince them or how does one work on this issue so I think fexibility is absolutely key and this is a very welcome part of our of our of our new national education policy ill give you a couple of examples of what we've been doing for this flexibility in the academic curriculum so for the undergraduates which is the B.Tech. who come into the core engineering department they have for many years now been able to choose from a basket of miners which might be in a different department they have a large basket of elected and so even though they're in a particular department they have many options in terms of what sort of course work they can do on the campus this has been going on for a while but something that has just very recently been approved in our academic senate is our new liberal arts sciences and engineering program which is also for the undergraduate students it is for the B.Tech and this is a true liberal arts program that we are trying to that we brought into our system so when we talk of liberal arts we mean that the student has the choice to take up whatever subjects he or she would like to take of are certainly streams so there could be a stream where a student is interested in computer science and course the choice is not infinite because otherwise it might get a little bit distracted and a bit diffused so there biosciences and bio engineering so how would that student navigate his or her path from the first year B.Tech to the fourth, repeat another student might be interested in policy and engineering right so there are Such interesting combinations that there are very interesting job opportunities out there these days so in our liberal arts and sciences and engineering program will tell you first of all you know what it's about so the student enters in the first year does all the core courses with all of the other b-tech students and at the end of the first year based on their grades and their academic

performance. Students can opt for the Viberal arts program now why did we decide to do it this way because in the beginning of our discussions about this highly flexible program right it's very flexible after the first year they can take lots of different streams why did we decide to do it after the first year and have a grade you know have a cpi a very good academic qualification as one of the criteria it is because as was mentioned earlier some of the faculty felt this is diluting the engineering people this is the easy way out and in fact it's not because you know it's actually not trivial to be able to handle such disparate courses as engineering you know civil engineering and possibly policy right who knows so we wanted the students who take the liberal sciences and engineering choice and this is a program that sent academicians they were very good in their academics it was their choice and this is a program that is something which one would aspire to do which is not something that is all that some kind of default program that nobody really wants this is something that should be an aspirational program and we started with 30 because we know that if we start small as was also mentioned earlier if things work if things go well then we can start to increase the number of seats in this program so how is it actually done. So we do have as you know a committee that handles this program right so we have a committee of faculty who are from different departments and they actually are the ones who are sort of overseeing this program. We have also realized that this high level of flexibility is not that easy for students to handle right you know one needs a level of maturity to be able to handle flexibility, so we have very you know it's very clear in this liberal arts sciences and engineering program we need very strong faculty who can actually talk to students and sort of guide them along the way of choosing this independent path so that's the new liberal arts sciences and engineering program and should tell you that we are also doing an undergraduate curriculum revision right now, so i'm part of that committee and you know this liberal arts sciences and education program this program which is only for 30 students is actually driving a lot of our discussions as we try to revamp the entire UG curriculum right so of course the national education policy has been a big factor in all this but the fact that we have this you know lace program already approved by the senate is very nice because now we have that framework we know how we can build on it or we have some ideas from that for the entire undergraduate class, so that you know a little bit of background about flexibility into our undergraduate curriculum. You know one more angle of this discussion which is actually to do with you and your flexible academic um you know program framework you know you want to have you know there's this proposal to have many universities and have a much bigger you know framework certainly very much appreciate the comments about the bricks and you because you know was part of the international relations office when that was being done and you know it's something which is really valuable in terms of trying to bring different universities together. I will just give you quickly my experience as the professor In charge of the IITB monash academy so this is a joint Phd degree program with Monash university in Melbourne and it's gone very well it's been in existence for over 10 years and we've had hundreds of students graduate. I won't tell you too much about it but i'll just tell you one thing which is that you know for us to get to the stage where we could do a joint academic program with another university which happens to be Monash but think one could generalize this it took a lot of discussion so we had to spend so much time to figure out how our two academic programs could be, you know sort of mutually you know meshing so there were certainly governance structures in place and that was absolutely that's crucial that's crucial for the whole exercise but before that the lead-up time of discussing to figure out what we can do together and what is actually compatible or not compatible it took a lot of time so my request is that you know as we move ahead in our discussion sum please also you know let's also bring in a little bit of lead time so that we have

enough you know a mutual understanding and agreement so that as we go ahead everybody's on the same on the same platform so I'll stop right now and you know again thank you so much for having me and I look very and I look forward to hearing the rest of the panelists and of course discussing each of the points which turn out to be more interesting as we go along so thank you very much once again I'm done arts professor partners thank you so much and especially your description of the new program that you have for liberal arts and engineering program right was it liberal sciences sorry I miss that liberal arts it's all of them so it's called lace lasc liberal arts sciences and engineering so we are really bringing all the departments into this world right and so that's a very good illustration of what is happening what in the engineering institute sum and that's also kind of gives some photo for thought about where engineering is going because you know ones of the concerns that Professor Tripathi had raised was about unemployability of undergraduates employability and even Professor Patankar had talked about it. So these are issues that we can take up I think faculty members are often concerned about what is the nature of the discipline atleast the idea with which they started off is that does it remain or is it organically developing into something else I think that's an excellent idea coming from professor Patankar policy also has taken off in a big way. I don't know about the new one definitely IT Delhi has a policy school and an independent policy school now which is great and also the idea of departmental course has been revised and a lot of these institutions are undergoing curriculum review currently so definitely a lot of things are in them in the making as we speak about the implementation possibility of NEP 2020 guidelines.

Prof. Pritha Chandra

IIT Delhi

Abstract of the speech delivered during 1st National Conference

One of the primary goals for any national education policy is to remove disparity in literacy and learning among its populace. Likewise, the National Education Policy (NEP) 2020 is also placed against the Sustainable Development Goal (SDG) of the United Nations Development Program, which aims at achieving inclusive and quality education for all.

NEP 2020 covers a lot of ground, but here, we look at some proposals for HEIs. The first proposal is to develop Multidisciplinary Education and Research Universities (MERU) pulling teaching-intensive universities and degree-granting colleges under their ambit. Mentorship of small-sized and new HEIs by established HEIs is also presented as a way forward. The second suggestion is to establish a regulatory system which will monitor all HEI-related issues, including accreditation, funding, curriculum and assessment. The third suggestion is to recognize the work of academic workers and reward them accordingly. A tenure-track system may also be introduced for faculty members. The fourth is about rethinking and reorganizing degrees; special emphasis is given on considering 4 year BTech programs as include removing the MPhil degree. A final point is about internationalization of education. Established bachelors with research, enabling BTech holders to directly proceed to a 1 year masters. Other proposals HEIs are encouraged to establish campuses in other countries, while also inviting international faculty and students to their Indian campuses.

Prof. Kanchan Choudhuri

IIT Kharagpur

Abstract of the speech delivered during 1st National Conference

Actually I consider this exercise that is being held under the steward ship of IIIT Allahabad is not only important for IIT Allahabad, but it is important for the whole country and the future of the exit-entry norms that the NEP 2020 has envisaged. And the success or failure of this experiment is important for the whole nation. So that is the reason that I am actually joined Neetesh ji right from the beginning. This exercise, that first of all that what is intriguing to me is that anything that we take up first a problem has to be discussed that what is the problem that has told us? One thing is that NEP 2020 has told us to do it. That's fine, but NEP 2020 has told us because they have found that there is a large number of dropouts in the engineering colleges across the country. And that is the reason that they have told us that please try to do something about the exit and entry norms. But what is the actual number that has never been, you know, brought to light? How many people have really dropped from the engineering institutions in the last decade of the last? These things is very important because to sell our ideas to the country. Because whenever we place our, you know verdict this first we have to tell that what is the problem and why we are taking. This is number one that the number should be in front of us right in the beginning The second one is that have we made any sociological survey about the people who have dropped out and the reason for dropping out. Most of the time and our people, there are various reasons and financial reasons is only one of them, but there are many other reasons like, you know, I've seen many people in IIT Kharagpur also they feel that they are, they are meant for something else but their parents have by force put them into IITs and so they're dejected and they so they are upset. And that has led to a lot of dropouts and also lower scoring in there you know in their subjects. So that's very important that if we have any such results of such studies that has to be brought to fore on every occasion magni stating diversional process The next one is that that NEP 2020's dictum is very sacrosanct before us. They have told us, and we have to do it. But you say that NEP 2020 has not given us any time frame to do it and it may not be absolutely bound on us to make 100% exit and 100% entry norms. Why tell you this, that whenever we say that the people exit after one year, two years, basically we are encompassing the ITIs and the diploma colleges because ITs they study two years after Class 12, diploma the studies say class three years after Class 12 and the degree holders four years. So that means by one single stroke we are actually coming in competition with the diploma colleges and the ITIs colleges. Now this ITI, the certificate holders or the technician, the mechanics and the technicians are at par they will be churned out from the engineering college. So engineering colleges, apart from giving the degree giver, they also become the certificate giver and the diploma giver. And then in the job market come in direct competition with the ITIs and the diploma colleges. Now the point is that we do not know that how the job market will be accepting it. Now if we bring out something like, you know, somebody comes out after two years and mean, we have allowed the extra after one year, so one year will be competing with two years and then three years. So are those three years, what are they studying? Now the job market will be finally be deciding whether we are successful or not. If our exiled students, we better than the diploma students, then the diploma colleges will be tuning in to us, but if they are accepted then our experiments will not succeed. But similarly, because we have to remember one thing that the certificate holders or the ITIs, they are basically skill driven whereas diploma and the engineers they are knowledge driven and the skill and the knowledge are actually different paradigms because the skilled people there told how to use their hands in mechanical engineering, they will be taught that, ok, you do

welding and etc, if the trade is welding and so and if it could be automobile also. So similarly if they are exiting after two years, with what degree it will be a mechanical engineering degree certificate? So is mechanical engineering, can he compete with automobiles and automobile sector? Probably because automobile engineers will be certificate holders simply accepted. Can he compete in the welding sector? So these are the questions we have to ask when we allow them to exit, their success in the job market will also dictate our success that whether the experiment has succeeded. We don't want to fail. We don't want to be too old after five years. What brainstorming did you do that your products are failing today? So we have to also consider the possibility that initially in the first few years will be allowing only that three years exit, the diploma exit and compete with the diploma. If we succeed, then we will be driving more skills because there are many engineering colleges. There, you know they're skilling or the laboratory that it's not a laboratory, it is the, you know, where the welding's or the soldering for the electronics or doing any such things by the hand is there. So we have to develop that. So we have to actually come into direct competition in the job market. Now the 12+2, 12+3 and 12+4 there will be three different kinds of products in the job market, and then we have to see. So now from 12+4 if we are producing 12+2 and 12+3, will be in direct competition with the already existing products and we have to see and that's one of my biggest concern that whether will be succeeding or not. So, at every step, what I believe is that this experiment is very good, but we can go in steps. This is number one up to B.Tech and then regarding this Ph.D when you say that after eight years he gets a Ph.D as the Ph.D supervisors and I have got great reservation in fixing the time frame because have handled different kind of students. I have seen people after M.tech people get Ph.D after two and half a three years, people also cannot compete within eight years. They find it difficult. So Ph.D throughout the world is a different ball game altogether where time frame is totally dependent on the supervisor satisfaction. That is what they took in the Ph.D and there if we say that he will get Ph.D in eight years, it might not be taken viewed, you know, positively by the world body. The last point that want to mention is that when we are doing this exercise, we have to also tell the public that whether there is a similar kind of systems anywhere in the world or not so far. If it is not, we have to tell it is not there. We are unique first time in the world. That's also fine, but we have to mention because our education system is not stand alone. It is integrated with the whole world. Our products will be going elsewhere in the world and they will be seeking, you know, employment as well as, they would be going for further studies. So our education system, our all kinds of technologies is the integrated with the whole of the world. So therefore just like said in the beginning that the problem has to be stated, similarly, the worldwide effort said the worldwide what is the scenario that also we have to say. Whether or not it exists or it doesn't. So these are the some of the points that thought when they exercise, but must congratulate and involving a lot of spectrum of people throughout the country in the discussions.

"The Flexible Academic Program is quite an exciting model."

-Prof. Anil D. Sahastrabuddhe
Chairman, AICTE

Prof. Vimal Kumar

IIT Kanpur

Abstract of the speech delivered during 1st National Conference

IIT Kanpur is also thinking about flexibility. When we started, the NEP repo was not out. IIT Kanpur has just concluded the revision of its undergraduate academic programs. Its implementation has got delayed because of COVID and the academic senate has approved the new proposal in principle. So, we are talking about flexibility in the curriculum but differently. We had some of the flexibility features earlier, and we are now extending them.

For example, a student who comes to IIT Kanpur to do a four-year program in electrical engineering can move to Chemistry to do her master's or any other discipline after finishing four years. She will have to declare her intent at the end of the third year. I deliberately selected an odd combination to show that this is allowed. I teach economics, had a student who joined our BS four-year economics program, and he shifted to MTech computer science. So this is the kind of flexibility that we are providing. In principle, we have decided to extend it to the students of other IITS, NIT, and perhaps IIITs. We will open the master part not only for IITK students but also from other Institutes of repute. This plan has in-principle approval. As of now, departments have to get back to the Institute with their admission criteria for such students. And perhaps these students will have to spend more time than just a year, like one year and two summers. As they shift their branch from one discipline to another, they need to do more courses.

We shall also bring flexibility at the bachelor's level. I don't know how it would pan out because all these things are in the pipeline now. So through JEE, we give admission in computer science, Electrical, Chemistry, and many other disciplines. But for example, we do not have a program in biochemistry. So now, departments have been asked to float such programs, so it is very much possible that Chemistry and Biological Sciences, these two departments can come together and propose a program in biochemistry So what can happen is that students from Chemistry and Biological Sciences can declare their intent to move to this new program at the end of one year or two years, depending on what these departments want. So this is another kind of flexibility we are proposing.

Another example could give that the departments of Economic Sciences, Mathematics and Statistics, and Computer Science can come together and offer a program in Computer Science, Data Science, and Economics. Such a program is popular at MIT. If these three departments agree, it can be made open to everyone in the Institute. Only time could tell how successful we would be, but we are doing all these things If you look at the NEP 2020, there is a line that says no to rigid boundaries. Of course, it's effortless to say bul very difficult to achieve, but the aim here is to make things as open and flexible as possible; that's what we are trying.

We have also opened up the current program. Earlier, for example, electrical engineering students could do a project in only electrical engineering. Of course, if he wanted to do it in other departments, we had some provisions with many bureaucratic hurdles. A student could fulfill all the requirements, but all those things have been made smooth. Now it's effortless; a student doesn't need special permission to do a project in other departments. As long as a faculty member from the other Department agrees to give thema project, they can enroll in a project from another department. The idea is straightforward someone learning, let's say, electrical engineering, and he has some tools. Let's say he has learned some communication tools and feels that it has a big role in economics the way market is changing. So we

should not put a pressure on him or her that he has to do a project in electrical engineering.

Any flexibility that you come up with any target student that you have, there would be some misuse. Now, we all have to decide the threshold. You cannot make it. If you try to make if you say that misuse has be zero, then there won't be any flexibility. The flexibility comes with a little bit of abuse. Now, the idea is to think about how much misuse you could allow so that the system doesn't suffer. All these things that we are having and are working on in this direction in other ways.

Also, at IIT Kanpur, we say that all lectures would be recorded by default, but an instructor can opt out. IIT Kanpur has the concept of open electives (OE). Open elective means the courses that you can do in any Department, including your own Department. But now, we have increased the OE component up to 20%, so students also have a lot of freedom to do courses from other departments. And think this will bring this multidisciplinary into focus because we realize that research and development happen at the cutting edge. At the boundary, it's a tuRulent zone. You have a lot of friction and many issues, but a lot of gains also one can make on that boundary. So we are trying to regulate. We are trying to figure out how to harness whatever is on that boundary. Let us see how successful we would be.

Prof. Ganesh Kannabiran

Director, IIIT Sricity

Abstract of the speech delivered during 1st National Conference

You know the idea of Flexible Academic Program architecture is a really a nice idea and this is required for the given in current situation where in you know we have been following an approach for 30-40 years and we have got so many colleges at different levels but still our employability is relatively low in many colleges and also the graduates who are coming out of these colleges are getting degrees and which with those degrees they are not able to take up proper employment and the proper you know career opportunities mean leaving those top institutions like IITs and others now what we have not under stood for decades is student is a human being and he has got strengths and weaknesses and he has got likes and dislikes and those traits change over a period of time.

These days it changes very frequently and very often it changes and somehow our curriculum a beta curriculum for four years or an integrated program for five years is assuming that the students is a sort of an entity which has got a fixed expectations and for the next five years and he or she will graduate with that you know no expectation but unfortunately it is not true and we have seen in our own cases where you know this needs attention and here is an opportunity to do that the first thing that has happened is the digital learning or digital platforms that are today you know leveraging and enabling education at any where any time done of the important features of that is self learning and you don't need to really teach the students for 60 hours and we are the assumption that we think that the students learn only out of our lectures is being now you know proved to be wrong and the students have their own pace they have their

own ways of learning and the flexible systems will allow us to provide that there are two important things that were talked at the beginning one of the stream change and the other one is the electives and both are very important points. I don't need to repeat it and the students who join the degree when they are 17 years old and they come into the college start talking to the teachers talking to the peers listen to lectures read on their own then they think that that's this particular branch of study is what they don't want to do and their liking is else somewhere else so but our curriculum somehow allows doesn't allow the student to changes streams that's the first one the second done is the electives everybody talked about electives and we somehow offer electives at the end and somebody pointed out that these electives were offered and there were there was no excitement in taking those electives and learning something out of those electives so these two are the fundamental issues that can be solved through this proposed approach today.

We have in the last two years in our institute of white history city we have introduced what is called a specialization we take specialization now why we did this we have 250 computer science students and we have one curriculum for 200 companies, it's a typical vanilla curriculum that we have and with the 150 150 credits and everybody goes through this and the market if you look at the job market they are looking at specialized graduate or in the sense that they should have some basics of certain emerging technologies only then they are interested to hire them so we realized this vanilla beta computer science program or bengal beet hoven ec program is not going to really help and they need to really look at uh for the specialization we have out of we what we did was we reduced the credit overall credit requirements from 160 to 144 and we introduced specialization starting from the fourth semester they will start looking at specialization and they do about 20 credits through courses and projects and we found this approach and you know used to be really helping the students with this what is happening is instead of a student taking a random electives across various topics when they do a series of different but related electives under a specialization, it helps so this flexibility can further be extended in the proposed approach a student can take a specialization in from another university or to subject under a specialization from it can be taken from another university this is this flexible architecture will allow what we have done is within an institution but what can happen is it can be taken across institutions the second thing is about the skill focus that someone pointed out now what is happening is today the employability improves their ability to become entrepreneurs the ability to work in start-ups improves if more and more skill orientation of skilled focus is there in the teaching learning process and for example we have last year last batch of students introduceda track of three courses we call it as full stack development now they go through the course starting from a third fourth of the semesters and they do an internship in the summer and their employability has improved significantly.

So this is about the how do we integrate skill now this kind of courses let's say it's a full stack development! can be something else you know this particular opportunity can be made available students of other universities well this flexible architecture will provide that as well and finally we are now looking at continuing education programs where the it is for working professionals where we are looking at multiple exits and a two year mtech program is divided into three stages of eight months or in terms of time through period in terms of credit they will do one third of the credits in eight months and another probably another two thirds of credits in eight months and complete they get a certificate in the first stage they get a diploma second stage in the third stage we he'll he or she will get degree empty degree this has been approved by the board and senate we are launching it soon in the next academic year. This is being

proposed in the scheme are very good and as professor Raj Kumar was saying it is more about you know making sense and there is we need to see completeness in a small module level or a big module level or at the program level and otherwise you know whatever confusion that we have whatever weakness that we have will continue to be there in the system we are not able to ensure completeness with these few ideas

I thank organizers once again for the opportunity given to me.

Prof. Anupam Shukla

Director, SVNIT Surat

Former Director, IIIT Pune

Abstract of the speech delivered during 1st National

I heard the inputs given by Dr. Rajat Moona, Dr. Awasthi, Dr. Kanchan Chaudhary, Dr. Pankaj Jalote and Dr. Chaubey and they are very relevant and they tell us the another aspect of the concept since multiple entry-multiple exit. This complete scheme has been done by a committee and part of that and we have several meetings in last five-six months and then we come out with this structure which is also a tentative structure. Its needs to be structured in a proper way. So we are working on it and I will say a few things which are seeing the other aspects of the scheme and syllabus. As we know, that when we implement this scheme, it should be for the betterment of the students. Betterment in the sense they get good knowledge as well as they become eligible for the placement also. Because IIITs which are in Public-private partnership. The placement is very key element for the students, for admission. So student undergoing undergo the skilling pipeline graduates are expected to exhibit graduate attributes as define for program accreditation. So but there are few bugs in the higher education system which we should take care while implementing the scheme and syllabus that admission are not meritorious. First year adjustment is challenging due to switch off the regional language to English. So there is a provision in the new education policy that the teaching should be done in their own mother tongue in the regional languages. So, secondly, that is lack of this ancient concept, lack of peer learning, lack of self- evolution, lack of practical-skills, lack of ability to apply knowledge to solve real life problems, weak skills in problem-finding, problems solving and innovation, lack of cross-cultural communication and cross business functional skills, lack of knowledge of related industry standards, lack of imperative teaching, lack of research focused student projects, rare scope of cubators, lack of interdisciplinary courses, disconnect with the society. So it would be good to visit some seminars. There should be 80% to 20% ratio, 80% technical subjects, 20% will be liberal arts, Indian heritage subjects. These subjects may have been awarded credits, maybe, one or two credit. Online good medical science institutes to witness the interdisciplinary case treatments, and weekly all disciplines sessions may have interactions, related questions and explanations, virtual labs may be successful for programming subject like electronics, computer hardware may be required physical practice in lab. Peer instruction may be encouraged; self-evaluation will inculcate, field of self-discipline and complete self for excellence. Student projects need to be either well defined, research based or industry based. The course on few subjects which are out of box like Biosciences, Bio-design, it should be done under

collaboration with other institutes. Project management, account designing, thinking-ideas, maybe the core subjects of one or two credits. And that PG level that thesis work should be a consists of some complex problem, that is lies into some problems. The research students closely interact with fellow working on the slice sub problems and during the mid-presentation on all of them need an active participation. Arrangement may be made for teaching and practicing Indian languages. In a semester we may arrange the interaction with local farmers, small business entrepreneurs and worker and encourage the interaction in natural local language. So these are few things which keep in mind while designing the scheme and syllabus. Rest the proper structuring of the credits which we have done they are in a flexible mode. It will also be a better option that instead of fixing the time they should fix the number of credits before giving any degree. So that's all, if anything needed in the between I will let you know about my ideas.

Prof. Naveen Chandra Seth

Vice Chancellor, GTU, Ahmedabad

Abstract of the speech delivered during 1st National Conference

First I congratulate the organizer, particularly for this wonderful flexible academic program and every details they have discussed and every details mentioned in the concept not also, as far as the implementation is concerned, there is one concern to me that for a full-fledged FAP implementation think to create by the act of the parliament is I think it is to be a very, very difficult all it will take time, bureaucratic orders and other thing so restricted FAP to be implemented from these academic year either by the cluster of university or by intra-institute flexible collaboration or by the consortium of the institute or universities. I think that will be easy to implement and because the panel number one, they have raised the question that what is the acceptability of the certificate diploma or the degree from this. So I think the degree given by the existing institutes, so the goodwill is there. So there will not be any problem of such value of their certificate. In later on this FAP is slowly percolated to the difference institute, then it can be a means full-fledged FAP to be implemented. Second thing, instead of a pilot run with a only few institutes, think we should have a pilot run at the regional level. So, there will be a more penetration and the experience of different regions, it will be useful for the full-fledged implementation. And second thing, the Indian knowledge system, how it is to be integrate with this FAP? So that is also to be we have to think it. And the change in the stream that is also a one of the points to be discussed, I think that so, but overall it is a very good and it is the exactly I say the heart of this NEP 2020, if it is fully implemented there. But we should initiate with the restricted implementation. So that is my opinion.

Prof. Vineet Kansal

Former Pro Vice Chancellor &
Acting Vice Chancellor, AKTU Lucknow

ट्रिपलआईटी इलाहाबाद द्वारा लिया गया फ्लेक्सिबल एकेडमिक प्रोग्राम बहुत ही इनोवेटिव और आकर्षक एक प्रोग्राम है। जो की अपनी इस दृष्टि से भी बड़ा रोचक है, कि इसमें हम लोग नेशनल एजुकेशन पॉलिसी के implementation की बात कर रहे हैं। और इसके क्रियान्वयन के दृष्टिगत जो भी इसमें मुख्य आधार स्तंभ है मुख्यतः छात्र फैकल्टी और संस्थान उनकी स्वायत्तता उनको स्वावलंबन, उनको सामर्थ्यवान बनाने की दृष्टि से जो जो भी initiative महत्वपूर्ण है. उनकी बात हम कर रहे हैं इसमें सबसे महत्वपूर्ण अगर बात करें तो हमारे जो छात्र है उनको एक competitive environment देने की और उस competitive environment से इस बात की opportunity देने की है, कि वो संस्थानों में जा सके, अपने संस्थानों को बदल सके। केवल competition और मेरिट के आधार पर ही उनके छात्रों का, जो संस्थान हैं, उसमें वो continue करें, retain करें और उसमें वो entry ले सके। किसी भी वर्ष में किसी डिग्री प्रोग्राम के फर्स्ट ईयर में, सेकेंड ईयर में, थर्ड ईयर में, फाइनल ईयर में, तो ये अपने आप में बहुत ही रोचक और महत्त्वपूर्ण कदम है, और मुझे लगता है कि इसका प्रयास सराहनीय है। इसके अतिरिक्त जो शिक्षक हैं उनको स्वावलंबी बनाने के लिए वो केवल संस्थानों से लेना ही नहीं, संस्थानों को देने की दृष्टि से छात्रों के साथ मिलकर के project करने के लिए और giving back to institutions वाले मोड में जो काम करने की एक परिकल्पना है, तो उसमें इसके क्रियान्वयन के लिए जो उठाए गए दृष्टिगत कदम है और उसके बारे में जो काम करना है बहुत ही रोचक है, बहुत ही सराहनीय है, और ट्रिपल आइटी इलाहाबाद का मैं धन्यवाद देता हूँ कि उन्होंने जिस तरह से आगे होकर के देश के सभी संस्थानों के साथ, universities के साथ समन्वय करते हुए इस कदम को उठाया है. मुझे लगता है कि इसके काफी दूरगामी परिणाम होंगे और मैं व्यक्तिगत तौर से और संस्थान के रूप में डॉक्टर एपीजे अब्दुल कलाम टेक्निकल यूनिवर्सिटी के ओर से अपना पूरा सहयोग इस मुहिम में इस राष्ट्रीय मुहिम में देने का आपको वचन देता हूँ और इस बात का भी प्रयास करूंगा कि इसमें हम लोग जो भागीदारी कर सकते हैं, हमारे छात्र, हमारे शिक्षक, हमारा विश्वविद्यालय हम इसमें हमेशा अग्रणी रहेंगे और साथ में मिलकर काम करेंगे। ट्रिपलआईटी इलाहाबाद द्वारा लिए - गए इस प्रयास के लिए बहुत बहुत शुभेच्छा । धन्यवाद ।

Prof. Manish Arora

Team Leader, FAP Logo Design
Assistant Professor, BHU Varanasi

Abstract of the speech delivered during 1st National Conference

बाबा भोलेनाथ की नगरी से हर हर महादेव। जैसा कि इस लोगो की डिजाइन में बनाया गया है. वो शिवलिंग को एक कॉन्सेप्ट माना गया है। क्योंकि शिवलिंग जो है, वो सृष्टि के हम उनको ये मानते हैं कि जनक है और उस कॉन्सेप्ट को लेते हुए इसमें हमने जो राष्ट्रीय पक्षी मोर है उसके कॉन्सेप्ट को निकाला है और जो पीपल की स्वच्छता है कि 24 घंटे जो ऑक्सीजन देता है और शुद्ध रहता है, उसके शाखाओं को लेकर हम लोगों ने इसका पूरा इंटरनल कोलैबोरेशन किया है और उसको एक शेप देकर बनाया है कि एक आइडेंटिटी किस तरीके से जो पीपल की बहुत सारी ब्रान्चेस होती है, एक दूसरे में अंतर्निहित होती है, लेकिन जो उनका निचोड़ होता है वो होता है शुद्ध हवा प्रदान करना। वैसे ही ये FAP जो प्रोग्राम है यह बहुत मल्टी डिस्प्लिनरी, ट्रांस डिस्प्लिनरी और इंटरडिस्प्लिनरी लेवल पे एक दूसरे के साथ काम करेगा।

Prof. Pankaj Jalote

Founding Director, IIIT Delhi

Abstract of the speech delivered during 1st National Conference

Just first let us take global scenario of knowledge as we are in the knowledge world, engineering and sciences and so on. Actually people require more knowledge more skills to be employable than last five years that is ground truth. Companies, PG Programs they all requires student or whoever intakes the intake to be much better prepared. Now because the world is becoming more complex or jobs becoming more complex. So actually today the scenario is that we need more education to be employable or to be desirable than less. Let us understand that five years ago, if just you knew programming, you can simply get a job. Today you need to know just taking from IT you need to know a lot more. Ten years ago anybody any programming would get a job, today you cannot, you need to know a lot more before S/he can get a decent job. Let us understand the context because the world knowledge is increasing complexity is increasing, companies are demanding a lot more skills not less. So when people have been saying companies have been saying, our gradutes are not employable. They are complaining about lack of skills. You know by reducing a duration is unclearly they could not get more skill is going to less. So first of all therefore there is a need for keeping that unperceptive and the second point before have two or three suggestions only but the second point context is this, think the speaker just now mentioned that the data was share by Prof. Kanchan. If look it have involve in three four Institute people exiting before completing the degree are very very few. I would be imagine IIIT Allahabad similar few percent may be is what that my suspicion. The fact that the colleges where education is very poor, there were people want to leave that a different problem to work it. It is not a problem of people will be want to leave after three years because of non employability and so on so forth. So in the Institution that are familiar with mostly. The problem of people wanting to leave early is actually not. There most people come there to earn a B.Tech that probably 95% plus , most people who come to a M. Tech. Program and actually pay a heavy substantial fee they do not want exit a PG Program. They want to be M.Tech. and similarly though in PhD there are more people you would see more peoples are leave not without completing but even there incompletion rate in India are usually very very high.

So my main point is that 4th kind of institution at least one. I am familiar with both at B.Tech., M.Tech PhD level. The main use case is dominant use case remains that a person comes and want B.Tech. and exit with best B.Tech. S/he can, exit with M.Tech S/he can & exit with PhD, that is the main use case 90%+ for B.Tech. I would imagine 100% for M.Tech. and may be somewhat lower for PhD. Now, if that is the dominant use case which is said know is the case for many more good Institution.

My point is this design whatever you want to but the dominant use case. Please do not short change them, people come to IIIT Delhi, IIIT Allahabad. IITs to get a B.Tech, and that for M.Tech PhD and that should remain and focus should remain to make sure that the truly dominant use case was tuned. They get best B. Tech., best M.Tech, and best PhD. Now the Flexibility is desired thing, globally without NEP with NEP flexibility is desired thing but the flexibility without compromising the main use case.

"The new education policy must provide to all. students, irrespective of their place of residence, a quality education system, with particular focus on historically marginalized, disadvantaged, and underrepresented groups. Education is a great leveler and is the best too! for achieving economic and social mobility, inclusion, and equality. Initiatives must be in place to ensure that all students from such groups, despite inherent obstacles, are provided various targeted opportunities to enter ana excel in the educational system."
NEP 2020 Introduction para

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

-राष्ट्रीय शिक्षा नीति 2020 अनुभाग 9.3

Received Student's input on FAP

Shri Sumit Kumar Pandey

National Incharge, Think India

Think India foundation is a non-profit, apolitical think tank which involves the students of the institutes of national importance and other similarly placed institutes in achieving its mission to enable and empower people to live economically, emotionally, and socially fulfilled lives by leveraging Innovation, Science and Technology. Education, Entrepreneurship and Knowledge.

I would like to thank IIITA Prayagraj for involving 'Think India' in designing the Flexible Academic Program framework. The members of think India have been discussing the FAP concept since last 18-20 months and we have been continuously giving inputs to Prof. Neetesh Purohit.

It is a great satisfaction to note that almost all goals of NEP2020 have been very intelligently imbibed in the FAP framework. Particularly, we welcome the introduction of multi institute movement, multidisciplinary opportunities, flexible fee, multi exit and multi entry opportunities.

Think India will give wider publicity to the FAP framework so that more and more students should opt for studying under FAP framework. Also, think India will not leave any stone unturned for motivating other institutes to start admissions under FAP framework and to build the homogeneous and heterogeneous consortiums.

"A nation is advanced in proportion to education and intelligence spread among the masses."

–Swami Vivekanand

Student Gymkhana IIITA, Prayagraj

The student's Gymkhana of IIITA Prayagraj is grateful for giving us this opportunity of expressing our s and coordinating with other institutes gymkhana or student's bodies (organizations) for triggering larger discussions at their end. The Multimode, Multi-Institute, Multi Entry and Lateral entry, Multi Exit, Multidisciplinary Multilingual, the most needed features for academic curriculum which are fulfilled by Flexible Academic Program On behalf of students's fraternity IIITA Prayagraj, following comments are submitted: views on FAP

- Aovid genertion offers us a unique academic design that improves our online studying environments and affords new opportunities for numerous topics that may be explored digital/online. To train us how generation can provide students exclusive coaching enjoy and meare scholar mastering to offer a rich, multi-media, on line experience for off-campus schooling. Students revel in based totally on more bendy learning alternatives according to their preference most of the broader variety of alternatives would require a climinary handholding to discover the selection for college kids and consortium establishments. An initial framework for selecting preference-based courses and establishments for non-technical coaching experience shall begin the collaboration to standarde the FAP in its operations. The effective utilisation of institutional infrastructure and academic resources is one of the best benefits of this program,
- Entry-Exit Norms offered specializations and Curriculum under FAP. The entry and exit mechanism menioned is flexible. Similarly, reentry and lateral entry can be also more flexible. Theirs no rigid credit earning system, which is one of the important features of current curriculums in all IITS, IIITs and NITs. The overall scheme of subjects is good and opportunities can be given after every exit point. Sports and other cultural activities should also be given more considerations.
- Three-step Multi- Insitute FAP implementation seems wonderful. Restricted, Top-UP, Full FAP by proper involvement of Vls an Pls is great.
- Comprehensive Academic norms and Rule book for students enrolled under FAP. Rigid scheme of choosing subjects, Credit completion can be given more emphasis rather than Years completion. Involvement of students in amendment of any rules ca be given some attention.
- Non-Technical Courses in FAP. This is a great step taken by the FAP committee by involving non-technical subjects in this curriculum. Multidisciplinary subjects under FAP seems good enough. The credit weightage of these subjectscan be slightly increased.

Overall, FAP is flexible as it should be. This Program is much needed after the Covid Era which taught us to never stop. There are many seats available for engineering students but are not utilised and filled in an efficient maner FAP makes solutions to this problem much more efficient. Not only filling seats but also effective learning is fulfilled by this program.

Photo Gallery








1st National Conference on FAP

December 3-4, 2021, Jointly Organized by

IEEE UP SECTION (INDIA)

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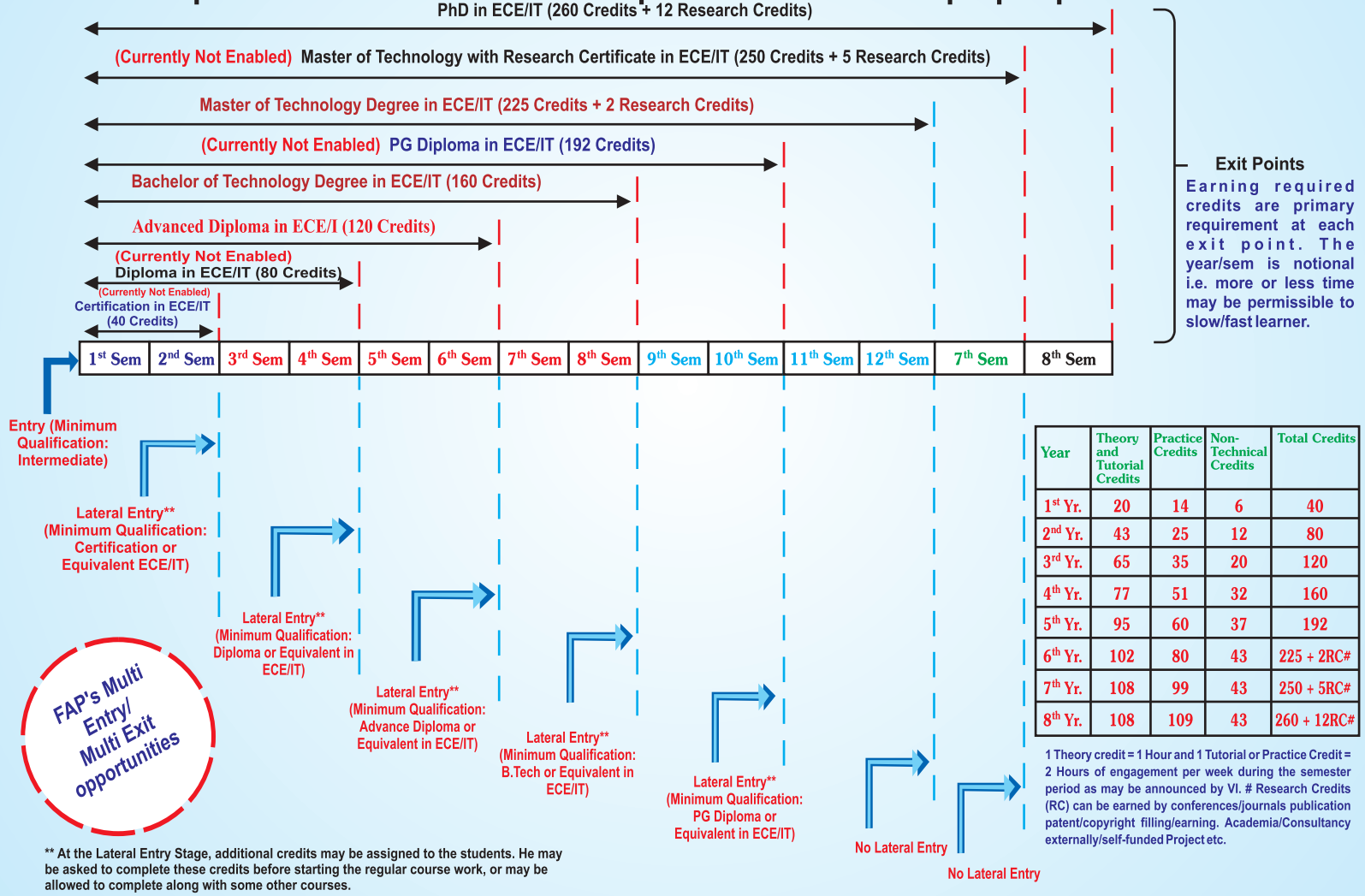
Flexible Academic Program "FAP"

WAYS OF IMPLEMENTATION

1 – Full Implementation | 2 – Restricted Implementation | 3 – Tup-Up Implementation



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

** 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 course work, or may be allowed to complete along with some other courses.

Flexible Academic Program

A Step Towards NEP 2020

Description of the FAP Visual Identity

The visual identity displays F and P in the bottom left and right parts such that these form an earthen lamp which represents the positive energy with a feeling like Tamso Maa Jyotirgamay. The letter A at the center has roots of a 'PEEPAL TREE', It represents the entire academic system with intermingled multiple branches indicating the multi disciplinary knowledge. Each branch has been upper bounded by a smooth curve giving it the shape of a SHIVLING, which is the ultimate knowledge and one can attain this supreme knowledge through any branch. The overall look from distant seems like a ZERO (0) and closer look reflects INFINITY (∞) too, which is the core of Indian Vedic science. The blue color used in this logo to enhance and explore the thoughts of FAP, blue represents the positivity, openness and great motivation as like Mother Nature. The visual identity made in line drawing and a single color makes the logs compatible for different platform like print, web and other new media.

लचीला शैक्षणिक पाठ्यक्रम (FAP) में समायोजित राष्ट्रीय शिक्षा नीति 2020 में उल्लेखित कुछ मूलभूत सिद्धांत

- लचीलापन
- कला और विज्ञान के बीच, पाठ्यक्रम और पाठयेत्तर गतिविधियों के बीच, व्यवसायिक और शैक्षणिक धाराओं, आदि के बीच समुचित एवं संतुलित समन्वय
- नैतिक, मानवीय और संवैधानिक मूल्यों का समावेश
- बहु-भाषिक और अध्ययन-अध्यापन के कार्य में भाषा की शक्ति को प्रोत्साहन
- जीवन कौशल जैसे आपसी संवाद, सहयोग, सामूहिक कार्य और लचीलापन
- सीखने के लिए सतत् मूल्यांकन पर ज़ोर
- सभी शैक्षिक निर्णयों की आधारशिला के रूप में पूर्ण समता और समावेशन, साथ ही शिक्षा को लोगों की पहुँच और सामर्थ्य के दायरे में रखना - यह सुनिश्चित करने के लिए सभी छात्र शिक्षा प्रणाली में सफलता हासिल कर सकें
- स्वयत्तता, सुशासन और सशक्तिकरण, उत्कृष्ट स्तर का शोध
- भारतीय जड़ों और गौरव से बंधे रहने का प्रयास
- शिक्षा एक सार्वजनिक सेवा है, जिसे सर्वजन हेतु सुलभता का प्रयास
- एक मजबूत जीवंत सार्वजनिक शिक्षा प्रणाली में पर्याप्त निवेश
- हर बच्चे की विशिष्ट क्षमताओं की स्वीकृति, पहचान और उनके विकास हेतु प्रयास
- सभी ज्ञान की एकता और अखंडता को सुनिश्चित करने के लिए बहु-विषयक दुनिया के लिए विज्ञान, सामाजिक विज्ञान, कला, मानविकी और खेल के बीच एक बहु-विषयक (multi disciplineary) और समग्र शिक्षा का विकास
- अवधारणात्मक समझ पर जोर, न कि रटंत पद्धति और केवल परीक्षा के लिए पढ़ाई

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