ACADEMIC REQUIREMENT FOR B TECH (ICT) PROGRAM
(Effective from Autumn 2021-22)

This document contains Rules governing the B Tech (Bachelor of Technology) program, which is a four-year undergraduate program. These rules are applicable to students admitted to the program in the academic year 2021-22 and onwards.

These Rules deal only with the post-admission academic activities of the program. Eligibility criteria for admission, admission procedures, etc. are outside the purview of this document. The Rules are subject to amendments from time to time as per the needs and requirements.

Dean (Academic Programs)/Registrar may, from time to time, issue such instructions or directions as may be necessary to give effect to and carry out the provisions of these Rules. Director, as Chairman of the Academic Council, may relax/exempt provision(s) of the Rules in exceptional situations and all such cases shall be reported to the Academic Council in the immediate next meeting.

Important terms/expressions used in the document have been defined in the GLOSSARY at the end of this document.

1. REGISTRATION

At the beginning of each semester, until the completion of the program, every student must register for the semester and for the courses that she/he will study during the semester.

1.1 Procedure for Registration:

The registration schedule is announced in advance, and registration is normally carried out within the first two days of each semester through the prescribed procedure (Student Registration System or SRS). Late registration may be permitted for valid reasons on submission of an application to the Deputy Registrar and only on payment of the prescribed late registration fee. In any case, registration must be completed before the prescribed last date for late registration in the Academic Calendar. Students having any outstanding dues to the Institute or hostel will not be permitted to register.

1.2 Eligibility for Course Registration:

A student with no backlog courses (i.e., who has passed all the previous courses) will be eligible to register for all courses prescribed in the curriculum for that semester, inclusive of the specified number of electives. A student who has backlog course(s) or is on academic probation may be recommended a different set of courses, by the Convenor of the UG Committee.

1 3 Withdrawal from Semester and Discontinued for Failing to Register:

a) A student who wishes to withdraw prior to registration for a semester must obtain a formal approval from the Dean (Academic Programs) before the prescribed last date for late registration for the concerned semester. Withdrawal after registration for a semester is permitted only on medical grounds or for other exceptional reasons and formal approval for such withdrawal must be obtained from the Dean (Academic Programs) before the date of commencement of the end semester examination for the concerned semester. Withdrawal from a semester, either prior to registration or after registration is permitted for only one semester at a time. If a student does not register for a regular semester or does not withdraw with permission from the Dean (Academic Programs) as indicated above, she/he will be discontinued from the Institute.

b) A student who registers for a semester after having withdrawn in the previous semester(s) may register for the available courses as prescribed in the curriculum for that particular semester as suggested by the UG Committee.

c) The transcript of a student who has "withdrawn" a semester would show the appropriate status for the corresponding semester(s). The transcript of a student who is suspended from a semester for an academic or disciplinary reason would also show "withdrawn" status in the corresponding semester.

2. AUDITING OF COURSES AND REGISTRATION FOR PG COURSES

2.1 Registration of Courses for AUDIT:

Auditing of courses allows students to gain exposure to additional subjects without increasing unduly their overall course load. Registration of courses for AUDIT is permitted from fifth semester onwards under the following conditions:

a) A student can take maximum two courses under audit during the entire program.

b) A student has to enter the courses to be audited in the Course Registration Form while registering for the semester. The word "Audit" would be specially mentioned in the remarks column of the student's course registration form.

c) A student can register a course for audit provided the following two conditions are satisfied:
   (i) The course Instructor permits and approves the registration.
   (ii) The lecture, lab and tutorial time-tables strictly permit.

d) An audit course will not be considered as an overload.

e) If the student's performance is satisfactory, a grade of P (Pass) would be awarded. If the performance is not satisfactory, a grade of F (Fail) would be awarded by the Instructor.

f) An audit course will not be considered for the purpose of calculation of Semester Performance Index (SPI)/Cumulative Performance Index (CPI). However, the course will be reflected in the Semester Grade Report and Transcript as an Audit Course provided a grade of P is obtained, otherwise the course will not appear in the Semester Grade Report and Transcript.

g) In a semester only one course can be registered as an audit course.

2.2 Registration for Post Graduate Level Courses for Credit:

Students with a CPI of 7.4 or above may be permitted to register for available MTech level courses as credit courses from fifth semester onwards. Such courses would be regarded as a part of the prescribed course load for the regular semester. A student can register a Post Graduate level course provided the following two conditions are satisfied:
(i) The program convenor approves the registration, and
(ii) The lecture, lab and tutorial time-tables strictly permit.

3. COURSE LOAD

3.1 Regular Semesters:

A student is permitted to register for additional courses over the prescribed courses in the curriculum for a regular semester provided the total number of courses does not exceed 7 (excluding Co-Curricular Activities) and the total credits do not exceed 28. A student is permitted to underload her/his prescribed academic load in a regular semester by dropping one or more courses provided the number of courses is at least 4 and the registered credits are not less than 12. However, after completion of her/his seventh regular semester, a student will be permitted to register for less than four courses.

3.2 Summer Semester:

The summer semester is a special semester of approximately eight weeks between May and July. In a Summer Semester, a student can register for a maximum of three (3) backlog courses. For the purpose of this rule, internship would be regarded as two (2) courses and BTech Project Part II would be regarded as three (3) courses. BTech Project Part I would be regarded as a single course. However, no other course can be taken along with industrial/rural internship. For Summer Semester only, the term "backlog courses" indicates a course which a student has registered earlier and failed. However, for a student who has completed eight regular semesters, the term "backlog course" would have the standard interpretation as given in the Glossary. Furthermore, students who have completed eight regular semesters are also permitted to register for grade improvement in Summer Semester (see, section 5.2).

4. COURSE ASSESSMENT AND MODES OF ASSESSMENT

4.1 Course Assessment:

The various modes of assessment used for rating students' performance in a course include home assignments, tutorial assignments, laboratory work, group assignments, quizzes, tests (open or closed book), viva-voce, mini projects, etc. and the end-semester examination. Attendance in lectures/labs/tutorials may also be given due weightage in course assessment. The Instructor may make attendance in lectures/tutorials/labs compulsory (80% or less) and award "F" grade to students who do not achieve the prescribed level of attendance in that course. The distribution of weightage for the assessment (continuous evaluation) through the various modes listed above will be as indicated by the course instructor at the beginning of the semester.

Note: Academic requirements such as projects and summer assignments, which are prescribed in the curriculum, are regarded as courses for the purpose of assessment.
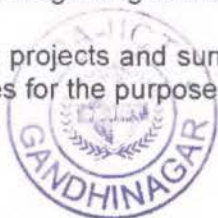
4.2 Grading:

a) For every course taken by a student, sne/he is awarded a letter grade based on her/his overall performance in all the assessments. These letter grades are assigned on a 10-point scale as described in the Table below:

Letter Grade	Corresponding Points	Explanation
AA	10	
AB	9	
BB	8	
BC	7	
CC	6	
CD	5	
DD	4	
DE	3	Pass
F	0	Fail
I	-	Incomplete
P	-	Passed

b) A student passes the course if she/he gets any grade in the range of AA to DE, but fails if she/he gets the grade F. Certain courses are indicated as Pass/Fail courses in the curriculum, and in these courses a grade of P or F is awarded. F grade may also be awarded in case of reported malpractice in examination(s)/continuous evaluation process.

c) Pass/Fail courses are not considered for calculation of SPI/CPI.

d) "I" grade will be awarded in a course if the overall performance of the student is satisfactory in the course, but the student either misses the end-semester examination due to illness, accident/death in the family and obtains an approval from the Dean (Academic Programs) under exceptional circumstances. A student who misses the end-semester examination must apply to the Convener of Undergraduate Committee and her/his application must be supported by (i) proper medical certificate duly approved by the Medical Authority of the Institute in the case of illness, or (ii) adequate evidence in the event of accident/death in the family. An application not so supported will not be considered. Grade "I" awarded for missing the end-semester examination will be converted into a performance grade (depending on the overall performance of the student in the course) after taking an examination equivalent to the end-semester examination of that particular course. An "I" grade must be converted into a performance grade by the specified date in the Academic Calendar for the next semester, otherwise it will be converted into "F" grade.

5. REPEATING A COURSE

5.1 A student must repeat a course in which she/he has obtained an F grade in a course taken for credit. Such a course is regarded as a backlog course and is subject to the regulations for registration as indicated in Section 3. A backlog elective course can be replaced by another elective of the same category (ICT/Technical/HASS/Open/Science).

5.2 Grade Improvement

A student whose CPI is less than 5.0 is allowed to repeat a course in which a DD or DE grade was obtained for the purpose of grade improvement in a regular semester only. The grade obtained in the repeated attempt will be considered for the purpose of calculating the CPI. The grade obtained in the first attempt will be shown in the Transcript, but will not be considered for calculating the CPI.

5.3 Backlog/Grade Improvement

A student will be allowed to register for one Backlog/Grade Improvement course during regular semesters subject to conditions stated in 5.1 & 5.2, and subject to conditions on maximum course load stated in section 3.1. The student should ensure while registering that there is no clash in the evaluation of the Backlog/Grade Improvement course and other regular course.

6. B TECH PROJECT / INDUSTRIAL TRAINING PROJECT

All students are required to complete the B Tech Project (BTP) or Industrial Training Project (ITP). The total number of credits will be as normally prescribed in the curriculum from time to time.

7. PERFORMANCE INDICES

7.1 Semester Performance Index (SPI):

The performance of a student in a semester is indicated by the Semester Performance Index (SPI). The SPI is the weighted average of the grade points obtained in all the courses registered by the student during the semester, calculated to two decimal places.

7.2 Cumulative Performance Index (CPI):

An up-to-date assessment of the overall performance of a student from the time of entering the Institute is obtained by calculating the student's Cumulative Performance Index (CPI). The CPI is weighted average of the grade points obtained in all the courses registered for credit by the student after entering the Institute. The CPI is also calculated to two decimal places.

8. MINIMUM REQUIREMENTS OF ACADEMIC PERFORMANCE

8.1 Academic Probation:

A student will be placed on Academic Probation with written intimation for his/her second semester if her/his SPI at the end of first semester is less than 4.5. In subsequent semesters, a student will be placed on Academic Probation with written intimation if his/her CPI in the previous semester is less than 5.0 or if his/her SPI is less than 4.5 in the previous semester.

For every student placed on Academic Probation, the Dean (Academic Programs) may prescribe a minimum SPI the student must attain in the semester. The minimum SPI so stipulated will be arrived at on the basis of the performance of the student in terms of her/his SPI/CPI, as compared to the minimum requirements for graduation.

8.2 Discontinuation from the Institute on Account of Poor Academic Performance:

If the performance of a student is poor so that she/he is not likely to benefit from continuing in the program any further, she/he would be required to leave the institute. For this purpose, an assessment of the student's academic performance will initially be made at the end of the second semester of her/his stay at the Institute and thereafter, at the end of every subsequent semester. This assessment will be based on the CPI and SPI obtained by the student.

8.3 Repeat a year OR Discontinuation from the Institute on account of Poor Academic Performance at the end of the Second and Fourth Semester:

A student whose CPI is less than 4.0 at the end of second or fourth semester shall be asked to repeat a year as appropriate with course improvement options in order to improve his/her academic performance. A student, who is placed on academic probation, may be allowed to register for the available backlog courses offered in the summer semester, following his/her second/fourth semester. Such a student is permitted to register for a maximum of three (3) of the available summer courses in which he/she is having F or DE grade. In case the student achieves the minimum CPI of 4.0 based on his results including the said summer semester, he/she would be allowed to continue the program; otherwise, the student will be asked to repeat a year OR discontinue from the program.

8.4 Minimum and Maximum Period for Completion of B Tech Program:

The minimum period to complete the program is four academic years. In any case, a student should fulfill the requirements for her/his Degree within a maximum period of six academic years, failing which she/he will be required to leave the Institute. The period of six years includes any semester for which the student has "withdrawn" status.

9. AWARD OF DEGREE

9.1 The B Tech (ICT) Degree will be conferred on a student after she/he has fulfilled the following requirements:

a. The student should have taken for credit and passed all the foundation and elective courses including internships, BTP/ITP, co-curricular activity and exploratory projects courses prescribed in the curriculum for the program.

b. The minimum total number of credits to be cleared is 154: 129 through core and elective courses, 19 through internships and BTP/ITP, 6 through co-curricular activities and exploratory project courses. Total course credits is 129, of which 90 correspond to foundation courses; the remaining 39 credits must be obtained through elective courses in form of (i) ICT electives (minimum three courses), (ii) technical electives (minimum four courses), (iii) science electives (minimum two courses), (iv) HASS electives (minimum one course), and (v) open electives (minimum two courses).

c. The minimum Final CPI (as described in Section 9.2) should be 5.0.
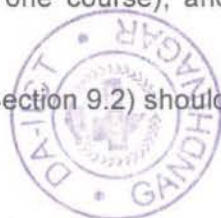
d The minimum number of grade points required from course work for graduation is 645 (129 x 5.0). For this requirement, internships and BTP/ITP credits 19 are not considered in case the student has earned the minimum number of credits, but does not have the minimum number of grade points, then she/he must take additional elective courses (up to the maximum specified for each category) in order to fulfill the requirement

e The student should have registered for at least eight regular semesters (i.e., excluding summer semester and the withdrawn semester) as a regular student and should have paid all the institute dues.

f. The student should have no case of indiscipline pending against her/him.

9.2 Final CPI and Class:

a) For the purposes of computing the CPI at the end of the program, the student's CPI will be computed on the basis of the best CPI obtainable from the courses taken subject to:
   i)   The total credits from course work will be taken from the least number of courses which are required to obtain 645 grade points; provided that these total credits must be at least 129, and must include 90 credits from foundation courses and must satisfy the minimum requirements for different categories of electives, as indicated in paragraph 9.1 (b) above.
   ii) All other courses taken by the student will be categorized as extra credits and not considered for calculating the final CPI.
   iii) The CPI would be computed inclusive of the grade points earned from course work, as described in 9.2 (a) and from the BTP. ITP has not impact on CPI since it is a Pass/Fail course.
   iv) The requirement of earned course credits and grade points is subject to change, with the Director's approval, in case credit structure of a course is modified.

b) The Transcript will indicate Distinction if the student obtains a CPI of 9.0 or above and First Class if the student obtains a CPI of 6.5 or above but less than 9.0.

9.3 Certificate of Academic Accomplishment:

A student who is unable to complete the degree requirements within the stipulated maximum period (see Clause 8.4 above) would be eligible to receive a "Certificate of Academic Accomplishment" by applying for it. The eligibility criteria and procedure for issue of the Certificate would be as laid down by the Institute from time to time.

10. B Tech (ICT) Honors degree:

A student will be awarded the degree of B.Tech in ICT with Honors if apart from meeting all requirements of the B.Tech(ICT) program,
   (a) the student takes additional minimum 5 courses and additional minimum 15 credits from a designated set of Honors courses starting from the fourth semester, and
   (b) the student must have obtained passing grade in the five designated Honours courses, and
   (c) the student should have obtained a minimum Final CPI of 6.5.

In case a student does not satisfy point (c), but meets the graduation requirements of the B.Tech(ICT) program, the student will receive a degree in B.Tech(ICT).

The total minimum credits for the B.Tech(ICT) with Honors program is 169, from which 129 come from foundational and elective courses, 15 from Honors courses, 19 from internships, 6 from co-curricular and exploratory project courses.

The CPI computation for the Honors program will include the grade points earned in the Honors courses.

11. GLOSSARY

Backlog Course: A course prescribed in the curriculum which has either not been registered or failed by a student.

Course Credit: Weighted sum of number of Lecture hours (L), Tutorial hours (T) and Practical hours (P) associated with the course. The weight for L and T is 1.0, and the weight for P is 0.5.

Grade Points: Product of the credits and points of a letter grade awarded to the course.

Semester: An academic year consists of two regular semesters of approximately 16 weeks duration each, the first (Autumn Semester) extending from July to December and the second (Winter Semester) from January to May. The summer semester is not a regular but a special semester of approximately eight weeks usually between May and July.

Semester Grade Report: Official record of the grades obtained in all the courses registered by a student in a semester.

Transcript: Official record of the grades obtained in all the courses registered by a student and is issued after the completion of the degree requirements.

Under-Graduate Committee (UG Committee): Committee of the Institute responsible for Policy Guidelines & Implementation Strategies covering the Undergraduate Program.

DA-IICT, Gandhinagar
October 2022

Executive Registrar
DA-IICT, Gandhinagar

BTech (ICT) and BTech (ICT) Honours Curriculum
(Effective from BTech 2021-22 batch)

1. Introduction: The Academic Council has approved the BTech Curriculum Review Committee Final Report, and directed that the revised curriculum contained therein should be followed with effect from the 2021 batch and onwards. The document contains the official description of the course structure for the BTech 2021 batch onwards.

2. Course Structure for B Tech (ICT) and B Tech (ICT) Honours Program with effect from 2021 Batch is indicated in Table 1:

Table 1

Semester-1	L-T-P-C	Semester-2	L-T-P-C
Introduction to ICT	1-0-2-2	Approaches to Indian Society	3-0-0-3
Language and Literature	3-0-0-3	Discrete Mathematics	3-1-0-4
Calculus	3-1-0-4	Digital Logic and Computer Organization	3-0-2-4
Introduction to Programming	3-0-0-3	Data Structures	3-0-0-3
Programming Lab	0-0-2-1	Data Structures Lab using OOP	1-0-2-2
Basic Electronic Circuits	3-0-2-4	Electromagnetic Theory	3-1-0-4
		Exploration Project	0-1-0-1
Co-Curricular Activities 1	0-0-2-1	Co-Curricular Activities 2	0-0-2-1
TOTAL	18	**TOTAL**	22

Semester-3	L-T-P-C	Semester-4	L-T-P-C
Science, Technology, Society	3-0-0-3	Principles of Economics	3-0-0-3
Linear Algebra	3-1-0-4	Probability and Statistics	3-1-0-4
Design and Analysis of Algorithms	3-1-0-4	Database Management System	3-0-2-4
Computer Systems Programming	3-0-2-4	Embedded Hardware Design	3-0-2-4
Signal and Systems	3-0-2-4	Introduction to Communication Systems	3-0-2-4
Exploration Project	0-0-2-1	**Honors-1**	3-x-x-3/4
Co-Curricular Activities 3	0-0-2-1	Co-Curricular Activities 4	0-0-2-1
TOTAL	21	**TOTAL**	20+(3/4)

Semester-5	L-T-P-C	Semester-6	L-T-P-C
Software Engineering	3-0-2-4	Environmental Science	3-0-0-3
Digital Communications	3-0-2-4	SE-1	3-0-0-3
Computer Networks	3-0-2-4	ICTE-2	3-0-2-4
ICTE-1	3-0-2-4	TE-2	3-0-0-3
TE-1	3-0-0-3	TE-3	3-0-0-3
Honors-2	3-x-x-3/4	Honors-4	3-x-x-3/4
Overload Slot		Overload Slot	
TOTAL	19+(3/4)	TOTAL	16+(3/4)

Semester-7	L-T-P-C	Semester-8	L-T-P-C
BTP-1	0-1-4-3	BTP-2/ BTP-1 & BTP-2/ ITP	0-2-14-9/ 0-3-18-12/ 0-0-24-12
ICTE-3	3-0-2-4	OE-1	3-0-0-3
TE-4	3-0-0-3	OE-2	3-0-0-3
HASSE-1	3-0-0-3		
SE-2	3-0-0-3		
Overload Slot		Overload Slot	
TOTAL	16	TOTAL	6+9/12/12

Course category and Credits

Type	Credits	Type	Credits
Core	90	Course Total	129
TE	12	Internships	7
ICTE	12	BTP/ITP	12
HASSE	3	Honours	15
SE	6	CoCurr	4
OE	6	Exp. Project	2
Honours	15	TOTAL	154+(15)
Rural Intern	3		
Res. Intern	4		
BTP/ITP	12		
Exp Proj	2		
CoCurr	4		

3. Table 2 shows the minimum and maximum number of courses permitted in each category.

Table 2: Allowed number of courses in Electives

Type	Min	Max	Credits	Remarks
ICT Electives	3	-	12	Additional courses taken in this category will be treated as Technical electives
Technical Electives	4	6	12-20	Courses offered as ICT Electives can be taken in place of the courses in this category. However, a course in this category does not qualify to ICT elective.

Type	Min	Max	Credits	Remarks
Science Electives	2	4	6-12	Physics, Mathematics, Life Sciences, and Engineering Sciences.
Humanities and Social Science (HASS) Electives	1	3	3-9	Humanities, Social Sciences, Management and Engineering Arts including Design.
Open Electives	2	-	6	Eligible courses in Open Elective category will be worked out by UGC/Dean (AP).

4. Additional Elements of the Curriculum: The provisions governing electives are indicated below.

4.1 ICT Electives: The ICT electives are technical courses in the areas of ICT with components of Electronics, Signal Processing, Communication, Information Technology, Computer Science and multi-disciplinary domains as well. The ICT electives category would be technical courses which have breadth/components in two or more of these three emerging fields Computer Systems, Communication Technology, and Electronics Engineering. These electives may also be in the nature of mathematical foundation courses that may be required by the ICT electives. Every student is required to take a minimum of 3 courses (12 credits) from the set of ICT electives. If a student passes more than 3 courses from the ICT electives category, then she/he can consider the additional course(s) as Technical electives. Appendix 2 lists the representative courses of ICT electives.

4.2 Technical Electives: The Technical electives fall in one of the groups of Electronics, Signal Processing and Communication, Information Technology and Computer Science, and Interdisciplinary. Every student is required to take a minimum of 4 Technical elective courses (12 credits) and up to a maximum of 6 courses (20 credits). Any ICT elective course can be taken in place of a Technical elective. In other words, a student taking more than 3 ICT elective subjects may treat the additional ICT elective(s) as Technical elective(s), but the reverse is not applicable.

4.3 Science Electives: Science Electives are courses offered in the areas of Physics, Mathematics, Life Sciences, and Engineering Sciences. Every student must take a minimum of 2 courses (6 credits) and is permitted to take up to a maximum of 4 courses (12 credits) from this category.

4.4 Humanities and Social Science (HASS) Electives: HASS electives are elective courses offered in the areas of Humanities, Social Sciences, Management and Engineering Arts including Design, which are not covered in the Technical electives. Every student must take one course (3 credits) and is permitted to take up to a maximum of 3 courses (9 credits) from this category.

4.5 Open Electives: There are two open elective slots (6 credits) available to students. Electives from any of the mentioned category qualify as an open elective.

4.6 Introduction of New Electives: The curriculum structure provides flexibility to the faculty to update the course contents, particularly for the elective courses, to keep pace with the latest technologies used in industry. Faculty members are encouraged to propose new electives in the ICT, Technical, Science, and HASS categories. The proposer of a new elective course is required to submit her/his course plan to Dean (Academic Programs). Then, the Undergraduate Committee conducts the review process of the course proposal with the help of internal and external faculty/experts. A new course proposal is reviewed by at least two reviewers and after the review process, the review comments are forwarded to the course proposer for incorporation in the course

proposal. Once the proposer incorporates the review comments in the new course, the course proposal is approved by the Dean (Academic Programs) and added into the program.

4.7 Internships: All students must undertake and pass Rural Internship of 3 credits (normally offered in the Semester Break between Semesters III and IV) and Research Internship of 4 credits (normally offered in Summer Semester after Semester VI).

4.8 B Tech/Industrial Training Project: The students must undertake and pass B Tech or Industrial Training Project (12 credits). The B Tech project can be taken on two parts; Part 1 (3 credits) and Part 2 (9 credits); either Part 1 may be taken in Semester VII and Part 2 in Semester VIII or both parts may be taken in Semester VIII.

4.9 Industrial Training Project (ITP): A student has option to do an Industrial Training Project (ITP) in the 8th semester in the off-campus mode. ITP is to be done at an approved industry site with a designated industry mentor and a well specified project. This option is suitable for those students who want to gain an early industry experience to better prepare them as an industry professional. This option may also be suitable for students who wish to gain this experience before heading out for higher studies. ITP is proposed to be graded on Pass/Fail basis. Industry mentor will assess the performance of the student and submit the grade to the ITP coordinator.

Graduation Requirement — B Tech (ICT)
1. Total credits – 154 (included 4 Co-Curricular and 2 Exploratory Project credits)
2. Course credits – 129
3. Internships and BTP/ITP credits – 19
4. Minimum Final CPI – 5.0

Additional Graduation Requirement – B Tech (ICT) Hons.
1. Honours courses – 5
2. Honours course credits Min. – 15
3. Minimum Final CPI - 6.5

4.10 B Tech (ICT) Hons. Degree will be conferred on a student after she/he has fulfilled all the requirements for the BTech (ICT) Degree and has also fulfilled these additional requirements:
   a. The student must have obtained passing grade in the five designated Honours courses.
   b. The student should have obtained a minimum Final CPI of 6.5.

NB: The course outlines will be notified separately.

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DA-IICT, Gandhinagar