1.4.2 Feedback processes of the institution may be classified as follows: (10)

A. Feedback is collected, analyzed, action is taken and feedback is available on the website
B. Feedback collected, analyzed and action has been taken
C. Feedback collected and analyzed
D. Feedback collected
E. Feedback not collected

Response: A

(Anand Kumar)
Dean of Academic Affairs

Stakeholders' feedback analysis

Feedback Analysis and Action Taken Report of Chemical Engineering Department for Design and Review of Syllabus valid from 2017 and 2019

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action is taken

against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedback, the specific observations for B. Tech. Chemical in AY 2017-18 are given below:

a) The number of lecture hours were high in most of the courses.
b) Focus on Project based learning should be increased.
c) Basic chemical engineering courses should be taught in earlier semesters
d) Chemical Engineering Thermodynamics should be taught in two courses
e) Emphasis on Process Instrumentation should be increased

Based on the feedback, the specific observations for B. Tech. Chemical in AY 2018-19 are given below:

a) The lab and theory courses should be combined for better and synchronized understanding of the concepts
b) The course on plant safety should be taught as a compulsory course.
c) The understanding of Material Science is a must for chemical engineers.
d) A course on Process Modelling & Simulation should be introduced
e) The flexibility in the selection of electives should be increased by increasing the number of electives according to the changing need of the chemical industry.

Based on the feedback, the specific observations for M. Tech. Chemical in AY 2017-18 are given below:

a) The evaluation scheme should be continuous in nature
b) The lecture hours of seminar should be increased.
c) A course on Design and Simulation should be added
d) The credit system and marks distribution for Project should be improved

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18).

A total of 182 students, 25 alumni, 1 employer and six teachers filled the questionnaire. Around 50 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was to be made. Thus, the same was carried out in the year 2017-18. While carrying out the revision of the syllabus and scheme of evaluation in 2017-18, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Majority of these suggestions were related to lengthy syllabus, more or less numerical, practical applicability of subject, etc. Consequent to the suggestions/inputs from the students, "Action was taken" was carried out through some reorganization of the syllabus in some of the courses.

The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2014-15) were made. It would be pertinent to mention that even in 2017-18, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2014.

I. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus of **B. Tech. Chemical Engineering** (operational from **2017-18**) with respect to the old one (operational from 2014-15) are as follows:

1. The marks distribution has been changed for all the courses to increase the % of internal marks from 33% to 50% the new entrants starting in academic session 2017-18

New entrants starting in academic session 2014-15				New entrants starting in academic session 2017-18			
CT	TA	End Sem	Total	CT	TA	End Sem	Total
30	20	100	150	30	20	50	100

2. The credits of following course are reduced for the new entrants starting in academic session 2017-18

Course Name	new entrants starting in academic session 2014-15	new entrants starting in academic session 2017-18
Fluid Mechanics	4 Credits	3 Credits
Heat Transfer Operation	4 Credits	3 Credits
Mass Transfer Operation-I	4 Credits	3 Credits
Engineering Economics & Management	4 Credits	3 Credits
Chemical Technology-I	4 Credits	3 Credits
Chemical Technology-II	4 Credits	2 Credits
Chemical Reaction Engineering -II	4 Credits	3 Credits
Transport Phenomena	4 Credits	3 Credits
Process Modelling and Simulation	4 Credits	3 Credits
Elective-I	4 Credits	3 Credits
Elective-II	4 Credits	3 Credits
Project in VIII Sem	8 Credits	12 Credits

3. Following changes have been made in the course grid

	new entrants starting in academic session 2014-15	new entrants starting in academic session 2017-18
Mass Transfer Operations-I	V	IV
Mass Transfer Operations-II	VI	V
Heat Transfer Operations	IV	III
Engineering Economics and Management	VIII	IV
Cyber Security	IV	III
Transport Phenomena	VII	VI
Modern Analytical Tools	III	IV
Seminar	VI	VII

4. The 4-credit course (3, 1, 0) “Mechanical Operations” in Sem. III is renamed to a 3-credit (3, 0, 0) course “Particle and Fluid Particle Processing” in Sem. III.
5. The 4-credit course (3, 1, 0) “Process Design and Economics” in Sem. VII is renamed to a 3-credit (2, 1, 0) “Plant Design and Economics” and shifted in Sem. VI
6. The 4-credit lab “Computer Application and Design Lab” (0, 0, 3) in Sem. VIII is renamed to a 2-credit lab “Design & Simulation Lab” (1, 0, 2) and shifted Sem. VII
7. The 4-credit course (3, 1, 0) “Chemical Process Utility” in Sem. IV is renamed to a 3-credit (3, 0, 0) course “Process Utility” in Sem. IV.

8. The 4-credit course (3, 1, 0) "Process Optimization" in Sem. VI is renamed to a 3-credit (3, 0, 0) course "Operation Research" in Sem. IV.
9. The single 4-credit course (3, 1, 0) "Chemical Engineering Thermodynamics" is converted into two separate courses: 3-credit (3, 0, 0) course "Chemical Engineering Thermodynamics-I" in Sem IV and 4-credit course (3, 1, 0) "Chemical Engineering Thermodynamics-II" in Sem V.
10. The single 4-credit course (3, 1, 0) on "Instrumentation and Process Control" in Sem V is converted into two separate courses: 3-credit (3, 0, 0) course "Process Instrumentation" in Sem. V and 3-credit (2, 1, 0) "Process Control" in Sem. VI.
11. The 4-credit course (3, 1, 0) "Computer Oriented Numerical Method" in Sem. IV and 4 credit lab "Numerical Techniques Lab" (0, 0, 3) in Sem. IV are combined to a single 4 credit course (3, 0 3) "Computer Oriented Numerical Methods" in Sem. IV.
12. The 4-credit lab (0, 0, 3) "Instrumentation and Process Control Lab" in Sem. VI and 4-credit lab (0, 0, 3) "Chemical Reaction Engineering Lab" in Sem. VI are combined into a single 2-credit lab (0, 0, 4) "Reaction Engineering & Instrumentation Control Lab" in Sem. VI.
13. The 4-credit course "Industrial Pollution Control and Waste Management" in Sem IV is moved from compulsory to Elective IV
14. The 4-credit course "Chemical Process Safety and Risk Assessment" in Sem V is moved from compulsory to Elective I
15. The 4-credit course "Energy Resource and Energy Conservation" in Sem VIII is moved from compulsory to Elective IV
16. A 3-credit course "Organizational Behavior" is added in Sem III
17. A zero-credit course "Indian Constitution" is added in Sem IV
18. The zero credit courses "General Proficiency" in Sem III to Sem VIII are removed as "Professional Communication" and "English Language and Composition" are already there in Semester II.
19. Two Lab courses: 2 credit (0, 0, 4) lab "Chemical Engineering Lab -I" in Sem III and 2 credit lab (0, 0, 4) "Chemical Engineering Lab -II" in Sem IV are added in place of 4 credit (0, 0, 3) lab "Applied Chemistry Lab", and 4 credit (0, 0, 3) lab "Fluid Flow and Mechanical Operations Lab" and 4 credit (0, 0, 3) lab "Heat Transfer Operation Lab".
20. The load hours of Project in Sem VII are increase from (0, 0, 6) to (0, 0, 8) with same number of credits.
21. The load hours of Project in Sem VIII are increase from (0, 0, 6) to (0, 0, 20) with increased credit from 8 to 10.

II. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus for **B. Tech. Chemical Engineering Program** (operational from **2019-20**) with respect to the old one (operational from 2017-18) are as follows:

1. The labs have been combined with the theory course in following Courses:
   i. Chemical Engineering Fluid Mechanics - TCH 25
   ii. Particle & Fluid Particle Processing - TCH 253
   iii. Process Heat Transfer - TCH 255
   iv. Chemical Process Calculations - TCH 257
   v. Mass Transfer Operations I TCH 234
   vi. Chemical Process Utilities TCH 256
   vii. Computer Aided Equipment Design - TCH 351
   viii. Chemical reaction Engineering-I - TCH353
   ix. Mass Transfer Operations-II - TCH 355
   x. Chemical Technology - TCH 359
   xi. Process Control & Instrumentation TCH 354

2. Following new Courses have been introduced which improve the student's employability
   i. Plant safe & Environmental Aspects - TCH360
   ii. Material Science & Engineering - TCH 362
   iii. Process Modelling & Simulation TCH 451

3. Following New Elective courses have also been introduced
   i. Electrochemical Technology TCH 459
   ii. Petroleum Refining & Petrochemical Technology TCH 461
   iii. Bio System Process TCH 465
   iv. Management of R&D TCH 467
   v. Advanced Chemical Process Control TCH 454
   vi. Conceptual Design of Chemical Processes TCH 462

III. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus for **M. Tech. Chemical Engineering Program** (operational from **2017-18**) with respect to the old one (operational from 2014-15) are as follows:

1. The marks distribution has been changed for all the 4 credit courses to increase the % of internal marks from 33% to 50% the new entrants starting in academic session 2017-18

New entrants starting in academic session 2014-15			
CT	TA	End Sem	Total
30	20	100	150

New entrants starting in academic session 2017-18			
CT	TA	End Sem	Total
30	20	50	100

2. The credits of seminar in semester III are reduced from 4 credits to 2 credits for the new entrants starting in academic session 2017-18. The practical hours for the seminar are increased from 2 hours to 4 hours.
3. 2 credits of Design and Simulation lab is added in semester III for the new entrants starting in academic session 2017-18
4. The marks of Dissertation in semester III have been increased to 100 marks (20% of total marks of Semester III) from 50 marks (11% of total marks of Semester III). The credits of dissertation have been reduced from 16 credits to 12 credits while the practical hours have been increased from 18 hours to 24 hours.

Feedback Analysis and Action Taken Report of Oil Technology Department for Design and Review of Syllabus valid from 2017

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure I present the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused***. *These are:*

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action

is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. **Annexure II** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 15 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. **Annexure III** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 13 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 13 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 20 attributes on which the teacher has to rate the course structure and syllabus of a particular course. **Annexure IV** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 20 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 20 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedbacks, the observations are given below:

a) Theory and laboratory classes of same subjects should be synchronized and taught in the same semester
b) More flexibility should be given in curriculum to choose subjects of choice from the basket of electives
c) Outcome based education system of AICTE should be implemented
d) The syllabus, seminar and project topics should be oriented towards industry related problems
e) Syllabus of subjects should include topics so that students get inclined towards innovation and entrepreneurship
f) The faculty members should use ICT tools for effective teaching.
g) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18)."
A total of 75 students, 8 alumni, 7 employer and 7 teachers filled the questionnaire. Around 37 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was to be made. Thus, the same was carried out in the year 2017-18. While carrying out the revision of the syllabus and scheme of evaluation in 2017-18, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Consequent to the suggestions/inputs from the students, alumni, employer and teachers "Action was taken" which was carried out through some reorganization of the syllabus in some of the courses. The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2013-14) were made. It would be pertinent to mention that even in 2017-18, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2013. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus (operational from 2017-18) with respect to the old one (operational from 2013-14) are as follows:

1. Outcome Based Education System
On the basis of observation and suggestions through feedback of employer and teachers the B.Tech program curriculum has been restructured and modified as per AICTE guidelines for transforming it to Outcome based Education System. This was also required for the NBA accreditation. For this following changes were done

(a) Program Educational objectives were framed
(b) Program Specific Outcomes were framed
(c) PEO and PSO are mapped with Missions of the department
(e) The Course outcomes of all subjects were framed and mapped with the Program Outcomes
(f) The Bloom's Taxonomy levels were also assigned to CO of all subjects
(g) The evaluation scheme and lecture plan were also included in syllabus
(h) A detailed lecture plan was prepared to help the teachers and students for better understanding

2. Synchronization of Lab courses with theory
(a) Oil Characterization Lab **(**IOT 351) merged with related theory subject Chemistry of Oils & Allied Products in the 3rd Semester.
(b) Oil and Oilseed analysis lab **(**IOT 451**)** merged with related theory subject Sources, Composition, Characterization of Oils, Fats and Waxes TOT 202 in the 4th semester
(c) Analysis of Soap Products **(IOT 551)** merged with related theory subject Technology of Soaps and Fat Splitting in the 5th semester

(d) Oils and Allied Products Formulation Lab **(IOT 552)** shifted from 5th to 6th semester and merged with related theory Subject Essential Oils & Cosmetics

(e) Detergent Products Preparation and Analysis Lab **(IOT 651)** merged with related theory subject Quality Assurance of Oils and Allied Products in 6th Semester

(f) Oil Processing Lab -2 **(IOT 751)** merged with related theory subject Hydrogenation and Modification of Oils in 7th Semester

3. Restructuring of course structure

Some courses were shifted to from one semester to another so that students could have better understanding of the subjects

(a) Expression and Extraction Techniques of Oil Bearing Materials shifted from 4th semester to 5th semester

(b) Commerce and Process Economics; Food Safety and Environmental Aspects of Oil Industry shifted from 5th semester to 7th semester

(c) **Essential oils & cosmetics** shifted from 8th semester to 6th semester

4. Restructuring Electives

Four Program Electives were introduced instead of one and some courses were included in electives instead of being a compulsory subjects

Advance Oil Chemistry and Oleochemicals

Biotechnology of Oilseeds and Oils

5. Research Project

It was decided to incorporate new research oriented industry based project entitled Project On Industrial Assignment IOT 802 in VIII semester. It was also decided to select topics of seminar based on environmental issues, global matters for sustainable development.

6. The syllabus Modification

(a) Chemistry of Oils & Allied Products (TOT 201)

The syllabus was restructured in six modules

Production & consumption Statics of area under cultivation and oil Production in the Country vis-à-vis world was added in Module I.

All the experiments of Oil Characterization Lab were included in sixth module for laboratory Experiments

(b) Sources, Composition, Characterization of Oils, Fats and Waxes TOT 202

The syllabus was restructured in six module

All the experiments of Oil and Oilseed analysis lab were included in sixth module for laboratory Experiments.

(c) Expression and Extraction Techniques of Oil Bearing Materials TOT 301

The syllabus was restructured in five modules.

Delinting (for cotton seeds) fruit processing for oil recovery, processing of palm & coconut and bye products was added in module I & II respectively.

(d) Technology Of Soaps & Fat Splitting TOT-303

The syllabus was restructured in six modules.

All the experiments of Analysis of Soap Products Lab were included in sixth module for laboratory Experiments

(e) Quality Assurance of Oils and Allied Products TOT-304

The syllabus was restructured in Six modules

All the experiments of Detergent Products Preparation and Analysis Lab were included in sixth module for laboratory Experiments.

(f) Commerce and Process Economics; Food safety and Environmental aspects of Oil Industry

The new syllabus is split in to 5 modules.

In Module-I: GST and import/export duty structure for oilseeds, oils – crude and refined, edible as well as non edible;
In Module-II: Capital cost of project for establishing oil mills, solvent extraction plant, oil refinery plant, & other plant related to oil industries, Technical appraisal of plants.
In Module-III: Financial projections- calculation of cost of production for oil mills, solvent extraction plant, oil refinery plant & other plant related to oil industries Break Even Point, Rate of Return, Pay Back Period, Depreciation etc.
Concept of variable frequency drive, PLC & SAP. Factory lay out: Principles, general considerations, typical flow diagrams, single & multi storied buildings, different sections of a oil refinery factory and their locations, Instrumentation and automation in oil refinery. Machine layout of solvent extraction and oil refinery plant.

The following sections has been removed-

Tax and import duty structure for oilseeds, oils – crude and refined, edible as well as non edible.

Cost and cost analysis of establishing plants e.g. Fixed and variable cost, Break Even Point, Rate of Return, Pay Back Period, Depreciation etc.s;

Utilities; power, steam, air, water in expression, solvent extraction refining plant, hydrogenation plant, oleochemical unit;

A working layout and calculation of cost of production for above plants and feasibility studies. Factory lay out: Principles, general considerations, typical flow diagrams, single & multi storied buildings, different sections of a paint factory and their locations, Instrumentation and automation.

(g) Refining of oils TOT 302

The new syllabus is split in to 6 modules.

Module – I: Px series of separators, Winterization in oils.

Module – V: blending of oils, micronutrients present in vegetable oil and effect of processing on micronutrients Nutritional significance, specifications of blended and refined oils. Specifications of oils as per FSSAI, permissible limits of additives.

The following sections has been removed-

Blending of oils, micronutrients present in vegetable oil and effect of processing on micronutrients Nutritional significance, specifications of blended and refined oils. Specifications of oils as per FSSAI, permissible limits of additives.

(h) Hydrogenation And Modification Of Oils TOT-401

The syllabus was restructured in Six modules

Module –III- Filtration Techniques- Plate & frame filters, candle filters;
Module – V- Hydrogenation of palm stearin

All the experiments of Oil Processing Lab -2 were included in sixth module for laboratory Experiments.

(i) Packaging Of Oils ,Fats And Allied Products TOT-404

The new syllabus is split in to 5 modules.

Module-I: Its influence on customers, Comparison of glass & plastic packaging;
Module-II: essential components for selection of packaging materials, essential criteria for selection of packaging materials, Edible packaging &eco friendly alternative to the plastic;
Module-III: Types of polymers use as packaging materials & useful commercial blend of polymers packaging.

Module-IV: Typical laminates film's constructions and its benefits & application. Coating weight "Neck-in" and drawdown in extrusion Coatings and laminations.
Module-V: Packaging & its environmental impacts. Limitation of solid waste management practices. Types of packaging material and environmental issues, advantages and disadvantages. Minimizing environmental impact. Physical & chemical tests of packing materials.

New equipment procured for better exposure to laboratory classes. This helped the students to better understand theory courses/concepts.
Students are encouraged to work hard and learn new tools and techniques for B.Tech projects.

Feedback Analysis and Action Taken Report of Plastic Technology Department for Design and Review of Syllabus valid from 2017

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure I present the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused***. *These are:*

i) What do you like best about this course?

ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis

This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis

For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.

The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action

is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. **Annexure II** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 15 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. **Annexure III** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 13 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 13 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 20 attributes on which the teacher has to rate the course structure and syllabus of a particular course. **Annexure IV** presents the feedback format adopted by the university. As seen from the format, it is evident that it has 20 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 20 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedbacks, the observations are given below:

a) Theory and laboratory classes of same subjects should be synchronized and taught in the same semester
b) More flexibility should be given in curriculum to choose subjects of choice from the basket of electives
c) Outcome based education system of AICTE should be implemented
d) A subject on Nano technology or science should be included
e) The syllabus, seminar and project topics should be oriented towards industry related problems
f) Syllabus of subjects should include topics so that students get inclined towards innovation and entrepreneurship
g) Syllabus of subjects should be oriented towards competitive exams such as IES, GATE, UPPSC, PSU etc.
h) The faculty members should use multimedia for classes, etc.
i) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18)."
A total of 143 students, 26 alumni, 5 employer and six teachers filled the questionnaire. Around 45 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was to be made. Thus, the same was carried out in the year 2017-18. While carrying out the revision of the syllabus and scheme of evaluation in 2017-18, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Consequent to the suggestions/inputs from the students, alumni, employer and teachers "Action was taken" was carried out through some reorganization of the syllabus in some of the courses. The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2013-14) were made. It would be pertinent to mention that even in 2017-18, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2013. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus (operational from 2017-18) with respect to the old one (operational from 2013-14) are as follows:

1. Outcome Bases Education System

On the basis of observation of suggestions through feedback of employer and teachers the B.Tech program curriculum has been restructured and modified as p[er AICTE guidelines for transforming it to Outcome based Education System. This was also required for the NBA accreditation. For this following changes were done

(a) Program Educational objectives were framed
(b) Program Specific Outcomes were framed
(c) PEO and PSO are mapped with Missions of the department
(e) The Course outcomes of all subjects were framed and mapped with the Program Outcomes given by NBA and PSO of the program to get articulation matrices
(f) The Bloom's Taxonomy levels were also assigned to CO of all subjects
(g) The evaluation scheme and lecture plan were also included in syllabus
(h) A detailed lecture plan was prepared to help the teachers and students for better understanding

2. Synchronization of Lab courses with theory

(a) AIP lab **(IPL 351)** merged with related theory subject Polymer Chemistry in the 3rd Semester

(b) SPR lab **(IPL 451)** merged with related theory subject Polymerization Engineering I in the 4th semester

(c) PT lab **(IPL 551)** merged with related theory subject Rheology and Testing of Polymers in the 5th semester

(d) MPR lab **(IPL 552)** shifted from 5th to 6th semester and merged with related theory Subject Polymerization Engineering II

(e) PP lab **(IPL 651)** merged with related theory subject Polymer Processing II in 6th Semester

(f) PC lab **(IPL 751)** merged with related theory subject Advanced Polymer Materials in 7th Semester

3. Restructuring of course structure

Some courses were shifted to next semester so that students could have better understanding of the subjects

(a) PP I shifted from 4th semester to 5th semester

(b) PP II shifted from 5th semester to 6th semester

4. Restructuring Electives

Four Program Electives were introduced instead of one and some courses were included in electives instead of being a compulsory subjects

Plastic packaging and Waste Management;
Technology of Elastomers; and
Plastic Product and Mould Design

5. New Electives Added

Three New Electives were introduced viz.
Plastic Product Technology;
Polymer Blends and Alloys and
Polymer Nanocomposites.
These courses are based on recent technological development.
The syllabus of these subjects were designed.

6. Research Project

It was decided that research project were included in final year for interested in research and topics of seminar were based on environmental issues, global matters for sustainable development.

7. The syllabus Modification

(a) Polymer Processing II (IPL-502)

The syllabus was restructured in six modules

The module II was made exclusive for thermoset resins and all processing techniques related to thermoset were put in this module. Injection molding process for thermoset was included in this module

The module IV was assigned to hollow product manufacturing and blow molding faults were included. Process variables for rotational molding were added. Types of Stretch blow molding was added in this module.

The module V was assigned to in-situ polymerization techniques and Description of casting of Nylons, Polyurethane, Epoxy resin and acrylates was added in this module

All the experiments were included in sixth module for laboratory Experiments

(b) Polymerization Engineering II (TPL 602)

The syllabus was restructured in six module
First two modules were made for Engineering Thermoplastics
A module was added for specialty thermoplastics and Fluorine containing polymers were added in this module
The fourth and fifth modules were made exclusively for thermoset polymers and polyimide was added in this module and curing parameters were added.
All the experiments were included in sixth module for laboratory Experiments.

(c) Technology of Elastomers (TPL701)

The syllabus was restructured in five modules.
In the first module titled Introduction to elastomers and compounding Definition and characteristics of rubber and elastomer, significance of structure and important features of elastomers were added.
Mechanism of reinforcement of elastomers. Carbon black its characteristics and methods of production were added in this module.
A separate module was made for natural rubber
Two modules were added for synthetic rubbers.
Concept of various types of thermoplastic elastomers and their applications were added in module three
One module was made for industrial fabrication of rubber goods

(d) Rheology and Testing of Polymers (TPL 501)

The syllabus was restructured in six modules.
Importance of rheology on polymer processing techniques such as Injection Molding Machine , Extrusion, etc. was included in module I
All the experiments were included in sixth module for laboratory Experiments

(e) Structure and Properties of Polymers (TPL 602)

The syllabus was restructured in five modules
The topic on role of polymers in high tech. areas such as aerospace, telecommunication, defense, medical, etc. is added in module I
The topic Specialty polymers is added in module II
Methods of blending were included in module V

(f) Polymer Processing-I (TPL-502)

The new syllabus is split in to 4 modules.
In Module-I: Introduction to Polymer Processing and Extrusion: Concepts of Polymer Processing has been included.
In Module-III: Extrusion Processes for plastic products: Extrusion process details has been included.
The following sections has been removed-
Processing of polymers and role of rheology in polymer processing
Production of polymer foams like expanded polystyrene, polyurethane foams, etc.

(g) Polymeric adhesives and sealants TPL-703

The new syllabus is split in to 5 modules.
Module – I: Introduction and adhesion theories: Definition of adhesives and adhesive bonding, functions of adhesives, classification of adhesives have been included.
Module – II: Surface preparation and surface treatments: Testing and quality control has been included.

Module – IV: Characteristics and applications of adhesives: Polymer sealants. Structural adhesives have been included.
New subject on foam included in module V.
Module – V: Polymeric foams: Introduction to polymer foams, chemistry and physical formation, foaming ingredients, their effect on foam morphology and physical properties and applications of polymer foams have been included.
The following sections has been removed-
Techniques and evaluation of adhesives
Sealants, caulks, mastics, type of sealants, curing of sealants, properties and application relevant to different applications.

(h) Polymer composites TPL-801

The new syllabus is split in to 5 modules.
Module-II: Reinforcements for Polymer composites: boron fibers and their utility in polymer composites various forms of reinforcement have been included.

(i) Plastic Packaging and foam TPL-011 (elective)

The new syllabus is split in to 5 modules.
Module-I: Elements of packaging: Concept of plastic packaging, present state of packaging technology has been included.
Module-II: Polymer Packages and Quality Control: Selection criteria of various household and industrial polymeric packages. Printing on polymeric packages has been included.
The following sections has been removed-
Frictions of packaging
Foams of packages

(j) Plastic waste management TPL-012

The new syllabus is split in to 5 modules.
Syllabus now contains new section on polymer packaging as Module 1 and Module 2.
Module-I: Elements of packaging Concept of plastic packaging, present state of packaging technology, scope of packaging, advantages and disadvantages of polymeric packages over conventional packaging materials. Polymer films for packaging have been included.
Module-II: Polymer Packages and Quality Control Selection criteria of various household and industrial polymeric packages. Printing on polymeric packages. Testing and quality control. Newer developments in polymer packaging have been included.
Module-III: Plastic waste management: Salient features of the plastic waste management (PWM) rules. Waste treatment of various plastic plants, estimation of power requirement and efficiency of size reduction operation of plastics has been included.

(k) Polymer Chemistry TPL-301

The new syllabus is split in to 6 modules.
The first five modules were designed to carefully introduce basic cocepts of Polymer Chemistry
A full topic on crosslinking and its significance was introduced
All the experiments were included in sixth module for laboratory Experiments for practical knowledge

(l) Polymerization Engineering-I TPL-401

The new syllabus is split in to 6 modules.
The first five modules were designed to deal with theoretical concepts
A new module was designed on PVC and Poystyrene introduce basic cocepts of Polymer Chemistry

A full topic on crosslinking and its significance was introduced
All the experiments were included in sixth module for laboratory Experiments for practical knowledge

(l) Plastic Product and Mould Design TPL-702

This was made an elective subject so that students who are interested in the subject can choose this subject
The new syllabus is split in to 5 modules.
A topic on complex and engineering part design was introduced along with application of CAD in product design
A full topic on crosslinking and its significance was introduced
All the experiments were included in sixth module for laboratory Experiments for practical knowledge

New equipment procured for better exposure to laboratory classes. This helped the students to better understand theory courses/concepts.
Students are encouraged to work hard and learn new tools and techniques for B.Tech projects.

Prof. & Head
(Deepak Srivastava)

Feedback Analysis and Action Taken Report of Chemical Engineering Department for Design and Review of Syllabus valid from 2017 and 2019

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action is taken

against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedback, the specific observations for B. Tech. Chemical in AY 2017-18 are given below:

a) The number of lecture hours were high in most of the courses.
b) Focus on Project based learning should be increased.
c) Basic chemical engineering courses should be taught in earlier semesters
d) Chemical Engineering Thermodynamics should be taught in two courses
e) Emphasis on Process Instrumentation should be increased

Based on the feedback, the specific observations for B. Tech. Chemical in AY 2018-19 are given below:

a) The lab and theory courses should be combined for better and synchronized understanding of the concepts
b) The course on plant safety should be taught as a compulsory course.
c) The understanding of Material Science is a must for chemical engineers.
d) A course on Process Modelling & Simulation should be introduced
e) The flexibility in the selection of electives should be increased by increasing the number of electives according to the changing need of the chemical industry.

Based on the feedback, the specific observations for M. Tech. Chemical in AY 2017-18 are given below:

a) The evaluation scheme should be continuous in nature
b) The lecture hours of seminar should be increased.
c) A course on Design and Simulation should be added
d) The credit system and marks distribution for Project should be improved

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18).

A total of 182 students, 25 alumni, 1 employer and six teachers filled the questionnaire. Around 50 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was to be made. Thus, the same was carried out in the year 2017-18. While carrying out the revision of the syllabus and scheme of evaluation in 2017-18, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Majority of these suggestions were related to lengthy syllabus, more or less numerical, practical applicability of subject, etc. Consequent to the suggestions/inputs from the students, "Action was taken" was carried out through some reorganization of the syllabus in some of the courses.

The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2014-15) were made. It would be pertinent to mention that even in 2017-18, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2014.

I. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus of **B. Tech. Chemical Engineering** (operational from **2017-18**) with respect to the old one (operational from 2014-15) are as follows:

1. The marks distribution has been changed for all the courses to increase the % of internal marks from 33% to 50% the new entrants starting in academic session 2017-18

New entrants starting in academic session 2014-15				New entrants starting in academic session 2017-18			
CT	TA	End Sem	Total	CT	TA	End Sem	Total
30	20	100	150	30	20	50	100

2. The credits of following course are reduced for the new entrants starting in academic session 2017-18

Course Name	new entrants starting in academic session 2014-15	new entrants starting in academic session 2017-18
Fluid Mechanics	4 Credits	3 Credits
Heat Transfer Operation	4 Credits	3 Credits
Mass Transfer Operation-I	4 Credits	3 Credits
Engineering Economics & Management	4 Credits	3 Credits
Chemical Technology-I	4 Credits	3 Credits
Chemical Technology-II	4 Credits	2 Credits
Chemical Reaction Engineering -II	4 Credits	3 Credits
Transport Phenomena	4 Credits	3 Credits
Process Modelling and Simulation	4 Credits	3 Credits
Elective-I	4 Credits	3 Credits
Elective-II	4 Credits	3 Credits
Project in VIII Sem	8 Credits	12 Credits

3. Following changes have been made in the course grid

	new entrants starting in academic session 2014-15	new entrants starting in academic session 2017-18
Mass Transfer Operations-I	V	IV
Mass Transfer Operations-II	VI	V
Heat Transfer Operations	IV	III
Engineering Economics and Management	VIII	IV
Cyber Security	IV	III
Transport Phenomena	VII	VI
Modern Analytical Tools	III	IV
Seminar	VI	VII

4. The 4-credit course (3, 1, 0) “Mechanical Operations” in Sem. III is renamed to a 3-credit (3, 0, 0) course “Particle and Fluid Particle Processing” in Sem. III.
5. The 4-credit course (3, 1, 0) “Process Design and Economics” in Sem. VII is renamed to a 3-credit (2, 1, 0) “Plant Design and Economics” and shifted in Sem. VI
6. The 4-credit lab “Computer Application and Design Lab” (0, 0, 3) in Sem. VIII is renamed to a 2-credit lab “Design & Simulation Lab” (1, 0, 2) and shifted Sem. VII
7. The 4-credit course (3, 1, 0) “Chemical Process Utility” in Sem. IV is renamed to a 3-credit (3, 0, 0) course “Process Utility” in Sem. IV.

8. The 4-credit course (3, 1, 0) "Process Optimization" in Sem. VI is renamed to a 3-credit (3, 0, 0) course "Operation Research" in Sem. IV.
9. The single 4-credit course (3, 1, 0) "Chemical Engineering Thermodynamics" is converted into two separate courses: 3-credit (3, 0, 0) course "Chemical Engineering Thermodynamics-I" in Sem IV and 4-credit course (3, 1, 0) "Chemical Engineering Thermodynamics-II" in Sem V.
10. The single 4-credit course (3, 1, 0) on "Instrumentation and Process Control" in Sem V is converted into two separate courses: 3-credit (3, 0, 0) course "Process Instrumentation" in Sem. V and 3-credit (2, 1, 0) "Process Control" in Sem. VI.
11. The 4-credit course (3, 1, 0) "Computer Oriented Numerical Method" in Sem. IV and 4 credit lab "Numerical Techniques Lab" (0, 0, 3) in Sem. IV are combined to a single 4 credit course (3, 0 3) "Computer Oriented Numerical Methods" in Sem. IV.
12. The 4-credit lab (0, 0, 3) "Instrumentation and Process Control Lab" in Sem. VI and 4-credit lab (0, 0, 3) "Chemical Reaction Engineering Lab" in Sem. VI are combined into a single 2-credit lab (0, 0, 4) "Reaction Engineering & Instrumentation Control Lab" in Sem. VI.
13. The 4-credit course "Industrial Pollution Control and Waste Management" in Sem IV is moved from compulsory to Elective IV
14. The 4-credit course "Chemical Process Safety and Risk Assessment" in Sem V is moved from compulsory to Elective I
15. The 4-credit course "Energy Resource and Energy Conservation" in Sem VIII is moved from compulsory to Elective IV
16. A 3-credit course "Organizational Behavior" is added in Sem III
17. A zero-credit course "Indian Constitution" is added in Sem IV
18. The zero credit courses "General Proficiency" in Sem III to Sem VIII are removed as "Professional Communication" and "English Language and Composition" are already there in Semester II.
19. Two Lab courses: 2 credit (0, 0, 4) lab "Chemical Engineering Lab -I" in Sem III and 2 credit lab (0, 0, 4) "Chemical Engineering Lab -II" in Sem IV are added in place of 4 credit (0, 0, 3) lab "Applied Chemistry Lab", and 4 credit (0, 0, 3) lab "Fluid Flow and Mechanical Operations Lab" and 4 credit (0, 0, 3) lab "Heat Transfer Operation Lab".
20. The load hours of Project in Sem VII are increase from (0, 0, 6) to (0, 0, 8) with same number of credits.
21. The load hours of Project in Sem VIII are increase from (0, 0, 6) to (0, 0, 20) with increased credit from 8 to 10.

II. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus for **B. Tech. Chemical Engineering Program** (operational from **2019-20**) with respect to the old one (operational from 2017-18) are as follows:

1. The labs have been combined with the theory course in following Courses:
   i. Chemical Engineering Fluid Mechanics - TCH 25
   ii. Particle & Fluid Particle Processing - TCH 253
   iii. Process Heat Transfer - TCH 255
   iv. Chemical Process Calculations - TCH 257
   v. Mass Transfer Operations I TCH 234
   vi. Chemical Process Utilities TCH 256
   vii. Computer Aided Equipment Design - TCH 351
   viii. Chemical reaction Engineering-I - TCH353
   ix. Mass Transfer Operations-II - TCH 355
   x. Chemical Technology - TCH 359
   xi. Process Control & Instrumentation TCH 354

2. Following new Courses have been introduced which improve the student's employability
   i. Plant safe & Environmental Aspects - TCH360
   ii. Material Science & Engineering - TCH 362
   iii. Process Modelling & Simulation TCH 451

3. Following New Elective courses have also been introduced
   i. Electrochemical Technology TCH 459
   ii. Petroleum Refining & Petrochemical Technology TCH 461
   iii. Bio System Process TCH 465
   iv. Management of R&D TCH 467
   v. Advanced Chemical Process Control TCH 454
   vi. Conceptual Design of Chemical Processes TCH 462

III. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus for **M. Tech. Chemical Engineering Program** (operational from **2017-18**) with respect to the old one (operational from 2014-15) are as follows:

1. The marks distribution has been changed for all the 4 credit courses to increase the % of internal marks from 33% to 50% the new entrants starting in academic session 2017-18

New entrants starting in academic session 2014-15			
CT	TA	End Sem	Total
30	20	100	150

New entrants starting in academic session 2017-18			
CT	TA	End Sem	Total
30	20	50	100

2. The credits of seminar in semester III are reduced from 4 credits to 2 credits for the new entrants starting in academic session 2017-18. The practical hours for the seminar are increased from 2 hours to 4 hours.
3. 2 credits of Design and Simulation lab is added in semester III for the new entrants starting in academic session 2017-18
4. The marks of Dissertation in semester III have been increased to 100 marks (20% of total marks of Semester III) from 50 marks (11% of total marks of Semester III). The credits of dissertation have been reduced from 16 credits to 12 credits while the practical hours have been increased from 18 hours to 24 hours.

Feedback Analysis and Action Taken Report Of

Computer Science and Engineering Department

for Design and Review of Syllabus

A) Feedback Analysis process

The department carried out two types of feedback analysis that are qualitative and quantitative.

Qualitative Analysis

This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis

For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.

The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

B) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure-I presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

- *What do you like best about this course?*
- *What would you like to change about this course?*

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75%** are asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating

without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, its analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on an overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni have to rate the syllabus of a particular course. Annexure II presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 15 attributes, the questionnaire also has four questions in the narrative where the alumni have to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

- *In your opinion, what are we doing well and in what areas do we need to improve?*
- *Any additional feedback that you would like to offer?*

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure III presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 13 attributes, the questionnaire also has two questions in the narrative where the Employer has to suggest/write about the course teaching. These are:***

- *In your opinion, what are we doing well and in what areas do we need to improve?*
- *Is there any additional feedback that you would like to offer?*

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 20 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure IV presents the feedback format adopted by the university. As seen from the format, it is evident that it has 20 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has three questions in the narrative where the teacher has to suggest/write about the course teaching. These are:***

- *In your opinion, what are areas do we need to add into the curriculum to improve?*
- *What would you like to change in course structure?*
- *Any additional feedback that you would like to offer?*

Based on the feedbacks, the observations are given below:

a) The following subjects should be compulsory and not electives:

Internet of Things	ECS-360	B Tech CSE
Soft Computing	ECS 358	B Tech CSE

b) The syllabus, seminar and project topics should be oriented towards industry related problems
c) Syllabus of subjects should include topics so that students get inclined towards innovation and entrepreneurship
d) Syllabus of subjects should be oriented towards competitive exams such as IES, GATE, UPPSC, PSU etc.
e) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

1. **"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18).**

A total of 53 students filled survey for Soft computing, out of which 20 students suggested that the course should be made compulsory.

A total of 60 students of final year out of which 15 gave feedback to make IoT as compulsory course.

10 employers and 5 teachers filled the questionnaire. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was made in 2018. Some major issues were observed and minor revision was made again in 2019. While carrying out the revision of the syllabus and scheme of evaluation in 2019-20, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Consequent to the suggestions/inputs from the students, alumni, employer and teachers "Action was taken" was carried out through some reorganization of the syllabus in some of the courses. The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2017-18) were made. It would be pertinent to mention that even in 2019-20, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2017. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus (operational from 2019-20) with respect to the old one (operational from 2017-18) are as follows:

2. **Lab Exercises were introduced for Theory cum Lab Courses**
3. **Changes in Articulation matrix of subjects**

On the basis of observation and suggestions of NBA the articulation matrix of few subjects were changed. Course Outcome, Mapping between CO and PSO were introduced. The level of Bloom's Taxonomy was reviewed and modified accordingly.

4. New laboratories were established and following software was purchased:

S.No.	Item purchased	P.O. reference No.	Date	Attached Document No.
1.	Desktop Computers(Item-20)	192/Ext./TEQIP-III/2019	14.06.2019	Purchase Orders
2.	Software Math works suite	72/CS&P/CS/TEQIP-III/2019	18.09.2019	
3.	IBM Rational Architect Designer	73/CS&P/CS/TEQIP-III/2019	20.09.2019	
4.	OVS-ES License Agreement Subscription	74/CS&P/IL/TEQIP-III/2019	20.09.2019	
5.	Software NetSim	71/CS&P/CS/TEQIP-III/2019	14.09.2019	
6.	Software NetSim(Qualnet Simulator)	11/CS&P/CSE/TEQIP-III/2019	20.6.2019	
7.	Software(MS Dream Spark)	27/CS&P/CSE/TEQIP-III/2019	27.06.20019	
8.	Wireless sensor network(WSN) Development Kit	10/CS&P/CSE/TEQIP-III/2019	20.06.2019	
9.	IoT Lab Set-up1	08/CS&P/CSE/TEQIP-III/2019	20.06.2019	
10.	RO water Purifier(Item-01)	222/Ext./ TEQIP-III/2019	12.07.2019	
11.	Digital teaching Classroom(Item-02)			
12.	LCD(Item-01)			
13.	Interactive board(Item-01)			
14.	Sound Bar(Item-01)			
15.	Green Board(Item-01)			

5. Some Program Electives were made compulsory

- Internet of Things
- Soft Computing

6. Research Project

It was decided that research project were included in final year for interested in research and topics of seminar were based on environmental issues, global matters for Sustainable development.

7. The syllabus Modification

New courses introduced				
Sr. No.	**Subject Name**	**Course Code**	**Programme**	Introduced
1.	Python Programming	ECS-253	CSE	2019-20
2.	Data Science	ECS-359	CSE	2019-20
3.	Information Storage & Retrieval	EIT-469	CSE	2019-20
4.	Advance Database Management Systems	ECS-471	CSE	2019-20
5.	Multimedia Systems	EIT-487	CSE	2019-20
6.	Robotics	EIT-489	CSE	2019-20
7.	Software Testing	ECS-491	CSE	2019-20
8.	Agile Software Development	ECS-468	CSE	2019-20
9.	ERP Systems	EIT-472	CSE	2019-20
10.	Pattern Recognition	EIT-484	CSE	2019-20
11.	Computer Vision	EIT-488	CSE	2019-20
12.	Natural Language Processing	ECS-490	CSE	2019-20
13.	Virtual Reality	EIT-492	CSE	2019-20

8. Open Electives Introduced (Order no. 948/Acad./2019 dated 15/03/2019)

List of Open Electives offered by Various Departments in VII & VIII Semester

School of Engineering

Name of Departments	OEC I			OEC II		
Computer Science & Engineering (CS / IT)	OCS 433	Machine Learning	3(3-0-0)	OIT 444	Human Computer Interaction	4(3-1-0)
Electronics Engineering	OET 433	Mobile Communication	3(3-0-0)	OET 444	Image Processing	4(3-1-0)
	OET 435	Biomedical Electronics	3(3-0-0)	OET 446	Fuzzy logic with Electronics Engineering applications	4(3-1-0)
Electrical Engineering	OEE 433	Non-Conventional Energy Sources	3(3-0-0)	OEE 444	Industrial Measurements	4(3-1-0)
	OEE 435	Power Plant Engineering	3(3-0-0)	OEE 446	Industrial Control Systems	4(3-1-0)
Civil Engineering	OCE 433	Environmental Pollution and Management	3(3-0-0)	OCE 444	Introduction to RS and GIS	4(3-1-0)
	OCE 435	Disaster Management	3(3-0-0)	OCE 446	Introduction to Infrastructure Engineering	4(3-1-0)
Mechanical Engineering	OME 433	Solar Energy	3(3-0-0)	OME 444	Alternative Energy Resources	4(3-1-0)
	OME 435	Composite Materials	3(3-0-0)	OME 446	Industrial Engineering & Automation	4(3-1-0)

School of Chemical Technology

Name of Departments	OEC I			OEC II		
Chemical Engineering	OCH 433	Energy Resources and Utilization	3(3-0-0)	OCH 446	Air Pollution Monitoring and Control	4(3-1-0)
Bio-Chemical Engineering	OBE 433	Principal of Biochemical Engineering	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)
Oil Technology	OOT 433	Technology of Oil, Oil Seeds & Surfactants	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)
Plastic Technology	OPL 433	Introduction to Polymer Technology	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)
Food Technology	OFT 433	Nutritional aspects of Natural & Processed Foods	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)
Leather Technology	OLT 433	Introduction to Leather Technology	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)
Paint Technology	OPT 433	Basic Paint Technology	3(3-0-0)	OCH 444	Transport Phenomenon	3(2-1-0)

Dean of Academic Affairs
HBTU, Kanpur

9. Introduction of MOOC Courses for Final Year students (BoS on June 18,2018)

Details of Elective Courses that can be offered through MOOC/NPTEL/SWAYAM

B. Tech. CSE

Sr. No.	Elective Course Prescribed in the Syllabus	Equivalent Course That Can be Offered through MOOC/NPTEL/SWAYAM
	Elective-I	
1.	Data Warehousing and Data Mining (ECS-411)	• Data Mining
2.	Cloud Computing ((ECS-413)	• Cloud Computing • Introduction to Cloud Computing
.3.	Mobile Application Development (EIT-411)	• Mobile Application Development using Android
	Elective-II	
1.	Network Security (ECS-431)	• Crytography & Network Security • Network Security
2.	Digital Image Processing (ECS-433)	• Digital Image Processing
3.	Machine Learning (ECS-437)	• Introduction to Machine Learning
	Elective -III	
1.	Big Data Analytics (ECS-414)	• Big Data Computing • Introduction to Big Data
2.	Distributed Systems (ECS-416)	• Cloud Computing & Distributed Systems
	Elective-IV	
1.	Internet of Things (EIT-432)	• Introduction to IOT
2.	Soft Computing (ECS-438)	• Introduction to Soft Computing

Feedback Analysis and Action Taken Report of Electrical Engg. Department for Design and Review of Syllabus valid from Since 2019

A) Feedback Collection - Students

The practice of feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006, as best know. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA)/Coordinator of ICQA is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25/07 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university, as circulated. As seen from the format, it is evident that it has 25/07 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25/07 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, its analysis is carried out by the Dean (CE&IQA)/Coordinator of ICQA and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C)Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Anyadditional feedbackthat youwouldliketooffer?

D)Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Isthere anyadditionalfeedbackthatyouwouldliketooffer?

E)Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would youliketo change in course structure?
Anyadditional feedbackthat youwouldliketooffer?

Based on the feedbacks, theobservations are given below:

a) The course structure of the B.Tech. Electrical Engg. Department should be same as prescribed by the university
b) Some important subjects promoting Entrepreneurship, Employment and Innovation should be compulsory not as electives
c) Merger of labs can be considered.
d) The syllabus, seminar and project topics should be oriented towards industry related problems
e) Syllabus of subjects should be oriented towards competitive exams such as IES, GATE, UPPSC, PSU etc.
f) The faculty members should use multimedia for classes, etc.
g) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.
h) Regular Faulty Members should teach junior and senior classes

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2019-20).

While carrying out the revision of the syllabus and scheme of evaluation in 2019-20, efforts were also made to incorporate Feedback suggestions/inputs. Consequent to the Feedback "Action was taken" through some reorganization of the Contents in some of the subjects.

Changes in 2019-20

III Sem.

1.	PCC	EEE-253	Introduction to Digital Systems	4(2-1-2)	15	20	15	50	50	100
2	PCC	EEE-255	Introduction to Electrical Engg. Material	2 (2-0-0)	30	20	-	50	50	100

IV Sem.

1.	PCC	EEE-258	Bio-medical Instrumentation	3 (2-1-0)	30	20	-	50	50	100

V Sem.

1.	PCC	EEE-359	Utilization of Electrical Energy & Traction	3(2-1-0)	30	20	-	50	50	100

VI Sem.

1.	PCC	EEE-352	Power System-II	5 (3-2-0)	30	20	-	50	50	100
2.	PCC	EEE-358	Electromagnetic Field Theory	4 (3-1-0)	30	20	-	50	50	100

Feedback Analysis and Action Taken Report of Electronics Engineering Department for Design and Review of Syllabus valid from 2020

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action

is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

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In your opinion, what are we doing well and in what areas do we need to improve?
Anyadditional feedbackthat youwouldliketooffer?

D)Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
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E)Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would youliketo change in course structure?
Anyadditional feedbackthat youwouldliketooffer?

Based on the feedbacks, the observations are given below:

a) The course structure of the B.Tech. Electronics Engineering should be same as for all other branches of the university
b) Some important subjects should be focused on practical application of that subject.
c) Merger of labs has reduced the practical content and at least few labs should be as separate chapters
d) The syllabus, seminar and project topics should be oriented towards industry related problems
e) Syllabus of subjects should include topics so that students get inclined towards current technologies, innovation and entrepreneurship.
f) Syllabus of subjects should be oriented towards competitive exams such as IES, GATE, UPPSC, PSU etc.
g) The faculty members should use multimedia for classes, etc.
h) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi"

A revision in the course structure and in syllabus of ETD subject was done in loast two BOS meeting that was held on 2018 and 2020. The following changes that is given below is carried out.

1. Following points were changed (for syllabus of EET-101/102):

- Weightage of MOSFET must be embedded in Unit-II for its industrial prospects.
- Topic „modern display technique- OLED, AMOLED, PDP, QLED displays" must be incorporated in Unit –V.
- Behzad Razavi/ "Fundamentals of Microelectronics"/ Wiley added as reference book.

2. Following points were changed for syllabus of II B. Tech. ET subjects

- In the EMFT subject, the reference book of David K. Cheng included in the text book section.
- The subject Analog Electronics or Analog Circuits taught in the 5th Semester
- The subject Control System may be included is the 6th semester.
- Addition of FDSOI and PDSOI in the syllabus of Solid state devices.
- The effect of poles and zeros in negative feedback added in the 3rd unit of subject Analog Circuits.
- Addition the books by Allen and Holberg, Razavi and the lecture series by Razavi for the subject Analog Circuits.
- Addition of small signal analysis and large signal analysis (π model) etc. in the subject Analog Circuits.
- The topic of Impedance and gain analysis of amplifier is added in the subject of Analog Circuits.

3. Following points were changed for syllabus of III B. Tech. ET subjects

- ANALOG COMMUNICATION syllabus include the Analog communication Circuits (Transmitter and receiver circuit), Intermediate Frequency, Double Heterodyne Receiver and Analog receiver.
- ANALOG COMMUNICATION Experiment list include the transmitter and receiver experiments (no Kit base experiment, students need to prepare their transmitting and receiver circuit by themselves in Lab)

- In the ANTENNAS AND WAVE PROPOGATION syllabus „Antenna Principles" sections iclude Parabolic and loop antenna along with Horn antenna, Patch antenna.
- In the ANTENNAS AND WAVE PROPOGATION syllabus should contain Retarded potential, linear and binomial array, Return Loss of antenna
- "Antenna Theory Analysis and Design, by C. A. Balanis" included in the TEXT book list of ANTENNAS AND WAVE PROPOGATION.
- MICROPROCESSOR subject is renamed as MICROPROCESSOR & MICROCONTROLLER.
- MICROPROCESSOR syllabus contain AMR process (30% - 50% of the course), small portion of the 8051 microcontroller can be the there in the ARM section.
- MICROPROCESSOR syllabus contain cross compiler, RISC processor
- MICROPROCESSOR experiments list include sufficient amount of ARM based experiments
- OPTOELECTRONICS is replaced by the OPTICAL COMMUNICATION & SWITCHING NETWORK Subject with credit distribution of C(L-T-P) : 4(2-1-2)
- DIGITAL COMMUNICATION can be teach with credit distribution as C(L-T-P) : 3(2-0-2).
- In CONTROL SYSTEM Syllabus include in "State variable Analysis" section, the Kalman Base Control.

4. Following points were changed for syllabus of IV B. Tech. ET subjects

- Change in name from, Radar and Microwave Engg. to Microwave and Radar Engg." was suggested for better clarity. In the MICROWAVE AND RADAR ENGINEERING syllabus following topics are added in syllabus also.
    - S-parameters
    - Microstrip Line
    - Cyclotrons, directional coupler
    - T-junctions
    - Radar imaging
    - High Power Devices
    - Microwave filters
- In PEC-II (Elective –II) the subject of „COMPUTER NETWORKS" is replaced by subject "DATA COMMUNICATION NETWORKS" .
- include the topic of "Kalman Filtering" concept in ARTIFICIAL INTELLIGENCE Syllabus.

Feedback Analysis and Action Taken Report of Oil Technology Department for Design and Review of Syllabus valid from 2019

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action

is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedbacks, the observations are given below:

a) The course structure of the B.Tech. Oil Technology should be same as for all other branches of the university
b) Some important subjects should be compulsory not as electives like Biotechnology of Oils & Oilseeds, Technology of Soaps & Synthetic Detergents and Environmental Aspects of Oils & Allied Industries.
c) Merger of labs has reduced the practical content and at least few labs should be as separate courses
d) The syllabus, seminar and project topics should be oriented towards industry related problems
e) Syllabus of subjects should include topics so that students get inclined towards innovation and entrepreneurship
f) The faculty members should be motivated to use hybrid mode for teaching.
g) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2019-20).

A total of 105 students, 9 alumni, 6 employer and 6 teachers filled the questionnaire. Around 15 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was made in 2018. Some major issues were observed and minor revision was made again in 2020. While carrying out the revision of the syllabus and scheme of evaluation in 2019-20, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Consequent to the suggestions/inputs from the students, alumni, employer and teachers "Action was taken" was carried out through some reorganization of the syllabus in some of the courses. The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2017-18) were made. It would be pertinent to mention that even in 2019-20, the B.Tech. 2nd, 3rd, and 4th years were still governed by the old syllabus implemented in 2017. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus (operational from 2019-20) with respect to the old one (operational from 2017-18) are as follows:

1. Changes in Articulation matrix of subjects

On the basis of observation and suggestions of NBA the articulation matrix of few subjects were changed

2. New laboratories were introduced as separate subjects

(a) Chemistry of Oils & Allied Products Lab was introduced in the 3rd Semester and the 6th module was deleted from Chemistry of Oils & Allied Products

(b) Quality Assurance of Oils & Allied Products lab was reinstated as a separate subject in 7th semester and 6th module of Quality Assurance of Oils & Allied Products was deleted

3. Restructuring of course structure

Some courses were made as compulsory subjects and shifted to previous semester so that students could have better understanding of the subjects

(a) Biotechnology of Oils & Oilseeds shifted from 7th semester to 6th semester
(b) Hydrogenation & Modification of Oils shifted from 7th semester to 6th semester
(c) Technology of Soaps & Synthetic Detergents shifted from 7th semester to 6th semester

(d) Environmental Aspects of Oils & Allied Industries shifted from 8th semester to 6th semester

4. Restructuring Electives

Some Program Electives were made compulsory

(a) Biotechnology of Oils & Oilseeds

(b) Technology of Soaps & Synthetic Detergents

(c) Environmental Aspects of Oils & Allied Industries

6. Research Project

It was decided that the topics of research project conducted in final year and topics of seminar should be based on environmental issues, global matters for sustainable development.

7. The syllabus Modification

(a) Chemistry of Oils & Allied Products (TOT 253)

The sixth module was removed from the syllabus as Chemistry of Oils & Allied Products **and a new** lab was created as a separate subject

Accordingly articulation matrix was changed

(b) Quality Assurance of Oils & Allied Product (TOT 358)

The sixth module was removed from the syllabus as Quality Assurance of Oils & Allied Product **and a new** lab has been included as a separate subject.

Accordingly articulation matrix was changed.

(c) Biotechnology of Oils & Oilseeds (TOT 355)

This subject was made as a compulsory and shifted from Electives 7th semester to 6th semester

Articulation matrix was modified

(d) Technology of Soaps & Synthetic Detergents (TOT 356)

This subject was made as a compulsory and shifted from Electives 7th semester to 6th semester

Articulation matrix was modified

(e) Environmental Aspects of Oils & Allied Industries (TOT 360)

This subject was made as a compulsory and shifted from Electives 8th semester to 6th semester

(f) Common Changes

The articulation matrix of all the subjects were reviewed and was modified accordingly

The level of Bloom's Taxonomy was reviewed and modified accordingly

New equipment procured for better exposure to laboratory classes. This helped the students to better understand theory courses/concepts.

Feedback Analysis and Action Taken Report of Plastic Technology Department for Design and Review of Syllabus valid from 2019

A) Feedback Collection - Students

The practice of student feedback has been prevalent in the university (erstwhile HBTI Kanpur) since the year 2006 or so. However, the format has been modified since the reconstitution of the HBTI Kanpur into a university. The Dean (CE&IQA) is entrusted with the responsibility of devising a feedback mechanism, executing the same, and finally analyzing as well. The feedback involves a questionnaire to be filled by students for giving feedback on a course teaching so as to strengthen the quality of the teaching-learning environment. It contains 25 attributes on which the student has to rate the teaching of a particular course. Annexure 1 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 25 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the student has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

i) What do you like best about this course?
ii) What would you like to change about this course?

In a way, the questionnaire will give the student's satisfaction level at the end of the course so that improvement, if needed can be done. In order to ensure true feedback, only those students with **attendance more than 75% are** asked to fill the feedback format. The feedback is taken in a manner so as to ensure that the students give their feedback/rating without any apprehension so that improvement in teaching if any can be made. Once the feedback is taken at the end of the course, it's analysis is carried out by the Dean (CE&IQA) and results/findings of the same are sent to the concerned Head of Department for taking corrective actions, if needed.

B) Feedback Analysis process

Broadly speaking two types of analysis are carried out qualitative and quantitative.

Qualitative Analysis
This involves observing the general rating (in terms of poor, average, good, very good, and excellent) for all the 25 attributes/items given by all the students for a particular course taught by a teacher is noted. This rating is communicated to the concerned head of the concerned department for further necessary action at his end. Specific suggestions/comments given by students are also included in this analysis.

Quantitative Analysis
For each of the 25 attributes/items, the average rating of all the students/respondents is calculated. Once the average of each of the attributes for the whole class is obtained, their further average value is taken. This average rating represents the feedback of all the attributes of the whole class for that particular course and teacher.
The calculation carried out at a) and b) above along with the qualitative analysis was sent to the concerned head of the department with a request to communicate the same to the concerned teachers. The feedback is communicated in a manner that no teacher feels offended and takes the feedback/suggestions in a constructive and positive manner. No punitive action

is taken against any teacher because of any shortcomings/adverse feedback. This helps the teacher to incorporate the suggestions if any in the subsequent semesters.

C) Feedback Collection - Alumni

The feedback is collected from Alumni. The feedback involves a questionnaire to be filled by Alumni for giving feedback on a overall view on program so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the alumni has to rate the syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the alumni has to suggest/write about the syllabus. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Any additional feedback that you would like to offer?

D) Feedback Collection - Employer

The feedback is collected from Employer. The feedback involves a questionnaire to be filled by Employer for giving feedback on over all view on program so as to strengthen the quality of the teaching-learning environment. It contains 13 attributes on which the employer has to rate the program. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the Employer has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are we doing well and in what areas do we need to improve?
Is there any additional feedback that you would like to offer?

E) Feedback Collection - Teachers

The feedback is collected from Teachers. The feedback involves a questionnaire to be filled by teacher for giving feedback on a course taught by him or her so as to strengthen the quality of the teaching-learning environment. It contains 15 attributes on which the teacher has to rate the course structure and syllabus of a particular course. Annexure 2 presents the feedback format adopted by the university. As seen from the format, it is evident that it has 15 items/attributes which are to be rated on a scale of 1 to 5 ***where 5-Excellent; 4-very good; 3-good; 2-average; 1 –poor. In addition to these 25 attributes, the questionnaire also has four questions in the narrative where the teacher has to suggest/write about the course teaching. Since this feedback is about the "Design and Review of Syllabus" only, the following two questions were focused. These are:***

In your opinion, what are areas do we need to add into the curriculum to improve?
What would you like to change in course structure?
Any additional feedback that you would like to offer?

Based on the feedbacks, the observations are given below:

a) The course structure of the B.Tech. Plastic Technology should be same as for all other branches of the university
b) Some important subjects should be compulsory not as electives like Plastic Products and Mould Design; Technology of Elastomers; Polymer Composites.
c) Merger of labs has reduced the practical content and at least few labs should be as separate chapters
d) The syllabus, seminar and project topics should be oriented towards industry related problems
e) Syllabus of subjects should include topics so that students get inclined towards innovation and entrepreneurship
f) Syllabus of subjects should be oriented towards competitive exams such as IES, GATE, UPPSC, PSU etc.
g) The faculty members should use multimedia for classes, etc.
h) Efforts should be made to ensure that regular teachers instead of guest faculty teach core courses.

F) Action Taken

"Revision in Course Curriculum and Change in Syllabi" (implemented from 2017-18).

A total of 46 students, 14 alumni, 6 employer and 6 teachers filled the questionnaire. Around 21 of them suggested/answered in the narration about some change in the course/pattern of the subject. With the reconstitution of the erstwhile HBTI to HBTU Kanpur in September 2016, a revision of the syllabus, ordinances, and scheme of the evaluation was made in 2018. Some major issues were observed and minor revision was made again in 2020. While carrying out the revision of the syllabus and scheme of evaluation in 2019-20, efforts were also made to incorporate some of the students' suggestions/inputs, if feasible. Consequent to the suggestions/inputs from the students, alumni, employer and teachers "Action was taken" was carried out through some reorganization of the syllabus in some of the courses. The reorganization/changes in a few subjects as compared to the old syllabus (implemented in 2017-18) were made. It would be pertinent to mention that even in 2019-20, the B.Tech 2nd, 3^{rd,} and 4th years were still governed by the old syllabus implemented in 2017. Consequent to the suggestions/inputs from the students, some of the specific subject-wise changes/revisions/reorganizations made in the new syllabus (operational from 2019-20) with respect to the old one (operational from 2017-18) are as follows:

1. Changes in Articulation matrix of subjects

On the basis of observation and suggestions of NBA the articulation matrix of few subjects were changed

2. New laboratories were introduced as separate subjects

(a) Polymer Chemistry Lab was introduced in the 3rd Semester and the 6th module was deleted from Polymer Chemistry
(b) Polymer Testing lab was reinstated as a separate subject in 5th semester and 6th module of Rheology and Testing of Polymers was deleted

3. Restructuring of course structure

Some courses were made as compulsory subjects and shifted to previous semester so that students could have better understanding of the subjects
(a) PPMD shifted from 7th semester to 6th semester
(b) Polymer Composites shifted from 7th semester to 6th semester

4. Restructuring Electives

Some Program Electives were made compulsory

(a) PPMD

(b) Polymer Composites

(c) Technology of Elastomers

6. Research Project

It was decided that research project were included in final year for interested in research and topics of seminar were based on environmental issues, global matters for sustainable development.

7. The syllabus Modification

(a) Polymer Chemistry (TPL 201)

The sixth module was removed from the syllabus as Polymer Chemistry lab has been included as a separate subject

Accordingly articulation matrix was changed

Concept of functionality, characteristic properties and uses of polymers, application of copolymerization

(b) Rheology and Testing of Polymers (TPL 303)

The sixth module was removed from the syllabus as Polymer Testing lab has been included as a separate subject.

Accordingly articulation matrix was changed. Average level of relevance for PO2 and PO3 was increased to 2.5 from 1.8 and 1.2 for PO7 from 1.0

(c) Polymer Processing-I (TPL-301)

Anew module was added to add experiments and credit was distributed accordingly i.e. 3 theory classes, one tutorial and one for practical.

Accordingly articulation matrix was changed

(d) Polymerization Engineering-I (TPL-202)

Anew module was added to add experiments and credit was distributed accordingly i.e.3 theory classes, one tutorial and one for practical.

Accordingly articulation matrix was changed

Problems related to polymerization, measurement and control in polymerization was included in the syllabus

Commercially important copolymers were introduced

(e) Technology of Elastomers (TPL407)

This subject was made as a compulsory and shifted from Electives

In 4th module the content of Thermoplastic Elastomers has been increased

Articulation matrix was modified

(f) Common Changes

The articulation matrix of all the subjects were reviewed and was modified accordingly

The level of Bloom's Taxonomy was reviewed and modified accordingly

New equipment procured for better exposure to laboratory classes. This helped the students to better understand theory courses/concepts.

Students are encouraged to work hard and learn new tools and techniques for B.Tech projects.

Prof. & Head

(Deepak Srivastava)