



**Bansilal Ramnath Agarwal Charitable Trust's
VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE – 37
(An Autonomous Institute Affiliated to Savitribai Phule Pune University)**

Academic Information Booklet

For Under-Graduate Programmes

ACADEMIC YEAR 2016 - 2017

Rules & Regulations updated as per 16th Academic Board Meeting held on 26/07/2016

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FOREWORD

Ever since VIT became Autonomous in July 2008, we are working very hard to implement student centric schemes. The objectives we have kept in mind are :-

- 1) Overall personality development of the student
- 2) Inculcate self study culture amongst students
- 3) Multi-disciplinary approach
- 4) Flexibility to choose credits / courses
- 5) International exposure
- 6) Increase the effectiveness of teaching – learning process
- 7) Internationally compatible academic calendar
- 8) Develop “Vidyarthi”, not “Pariksharthi” (Develop Student, not Examinee)
- 9) Well planned Formative and Summative assessments
- 10) Exam on demand
- 11) Declaration of result within 15 days
- 12) Involvement of industry in curriculum design and teaching – learning process

To achieve the above objectives, we have implemented several out-of-the-box innovative practices like :-

- 1) GP / PD/ SD / HSS Courses
- 2) Home Assignment for all subjects
- 3) Semester mini project
- 4) Communication and Soft Skill courses
- 5) Three semester major project
- 6) Introduction of Honors / Minor Schemes
- 7) Reduced class strength of around 40 per division
- 8) Remedial teaching in every semester
- 9) End-Semester exam as per Bloom’s Taxonomy
- 10) Online Test for all courses and all years
- 11) Implementation of ERP system

This booklet contains all the important and useful information necessary for a student to understand the teaching – learning and assessment system. I hope that the students will go through it and take maximum benefit.

Prof. (Dr.) R.M. Jalnekar
Director



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ACADEMIC RULES AND REGULATIONS

I) Preface

a) Information of VIT :- Vishwakarma Institute of Technology is an Academically Autonomous Engineering Institute affiliated to University of Pune. The Institute is run by Bansilal Ramnath Agarwal Charitable Trust. It is one of the premier Engineering Institute of high repute in the country. The Institute was established in 1983 and during the journey of last three decades has grown up from an Under-Graduate to an Institute offering a variety of Under-Graduate, Post-Graduate and Research programs. Vishwakarma Institute of Technology is the first private, unaided engineering Institute in the state of Maharashtra to be granted Academic Autonomy.

The Institute is well known for its visionary management, matured and stable leadership, dedicated faculty, high academic standards, diverse co-curricular and extra-curricular activities and meritorious students.

The vision statement of the Institute is **'To be globally acclaimed Institute in Technical Education and Research for holistic Socio-economic development'**

The Mission statements of the Institute are

- 1. To impart knowledge and skilled based education in collaboration with Industry, Academia and Research Organizations**
- 2. To strengthen global collaboration for students, faculty exchange and joint Research**
- 3. To prepare competent Engineers with the spirit of Entrepreneurship**
- 4. To inculcate and strengthen Research aptitude amongst students and faculty**

As on the commencement of Academic Year 2016 – 2017, the Institute runs 9 Under-Graduate programs, 8 Post-Graduate

programs and 6 Ph.D. programs. They are as follows :-

Under-Graduate Programs :-

S.N.	Name of the Program	Intake
1)	Industrial Engineering	30
2)	Electronics Engineering	90
3)	Mechanical Engineering	90 + 60
4)	Computer Engineering	90 + 60
5)	Instrumentation & Control Engineering	60
6)	Chemical Engineering	60
7)	Production Engineering	40
8)	E & TC Engineering	60 + 60
9)	Information Technology	40

Post-Graduate Programs :-

S.N.	Name of the Program	Intake
1)	M.TECH. Mechanical – Heat Power Engg.	25
2)	M.TECH. Mechanical – Design Engg.	25
3)	M.TECH. Computer Science and Engineering – Information Technology	25
4)	M.TECH. Industrial Engg.	18
5)	M.TECH. Instrumentation Engg. (Process Instrumentation)	18
6)	M.TECH. Chemical Engineering	18
7)	M.TECH. E & TC Engineering	18
8)	Master of Computer Applications (M.C.A.)	30

Research Programs :-

S.N.	Name of the Program
1)	Ph.D. Mechanical Engineering
2)	Ph.D. Chemical Engineering
3)	Ph.D. Industrial Engineering
4)	Ph.D. Instrumentation & Control Engineering
5)	Ph.D. E & TC Engineering
6)	Ph.D. Computer Engineering

The Institute obtained Academic Autonomy since July 2008 and has implemented with good effect. The Institute has designed 'A Joyful Learning Model' which emphasizes on the overall development of the student as a responsible Engineer and human being, rather than producing a mere technocrat.

Unique Academic Features implemented after Autonomy

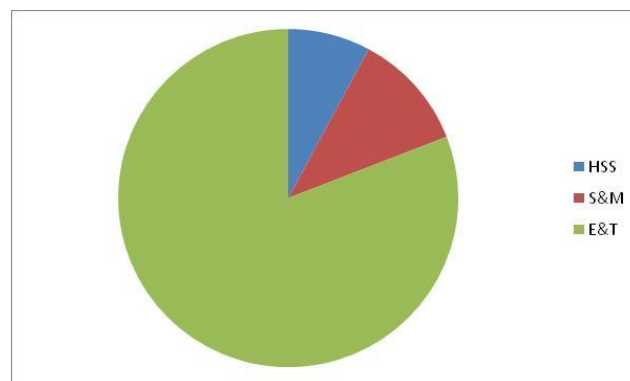
The Institute has emphasized on experiential learning and consciously designed its curriculum to allow students to carry out extra academic activities and stay academically occupied on the campus throughout the day. To that effect, Institute has designed novel courses such as General Proficiency (GP), Professional Development (PD), Skill Development (SD), Mini Project (MP) every semester, Comprehensive Viva-Voce (CVV), Communication and Soft Skill Courses, Technical and General Seminars, Technical Report Writing, foreign languages, Open Electives (OE) based on legal, commercial aspects as well as some courses emphasizing on engineering ethics, philosophy, etc. The Institute also offers optional inter-disciplinary courses under the Minor Stream and optional super specialization courses under the Honors Stream. Both the optional streams receive a warm response from the students. 80% of the students opt for the courses under these streams. The details of the courses along with the objectives are covered later in III (f).

II) Introduction

a) Composition of courses :- The Institute has maintained a critical balance and sufficient representation of Humanities and Social Sciences (HSS) courses, basic Sciences and Mathematics (S&M), Engineering and Technology (E&T) courses.

The Institute follows a Credit Based System (CBS) and Grade Point Averages (GPA) are calculated in every semester. The student can earn additional 10 credits through optional Honors / Minor courses. The

distribution of HSS, Science and Mathematics (S&M), Engineering and Technology (E&T) courses, typically is as under :-



b) Phases of Study

The curriculum is carefully designed to impart the necessary knowledge of engineering, technology as well as social sciences to prepare a competent global citizen. The three phases are as under :-

Phase I – Intense study of basic science, humanities and mathematics

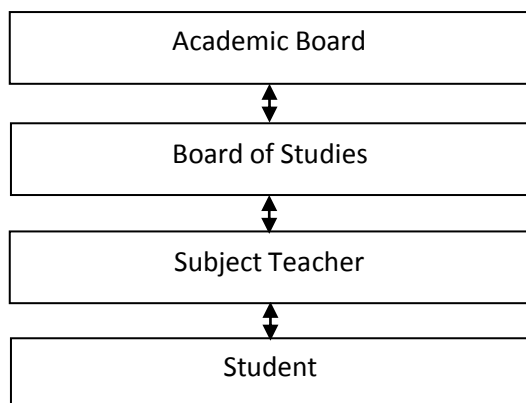
Phase II – Study of Engineering Sciences and Technology

Phase III – Exposure to Applied areas in chosen program of study

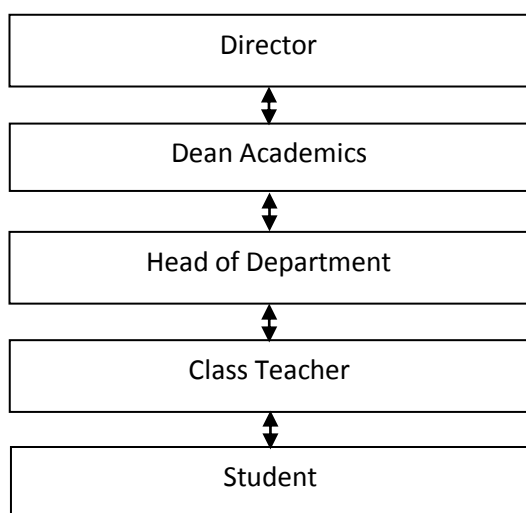
c) Academic Administration

The Academic Board of the Institute is the apex academic body that takes decisions about the implementation of academic practices in the Institute. The Director is the Chairman of the Academic Board. For policy making and implementation of programme specific academic initiatives, Board of Studies (BOS) are formed in the Six Degree awarding departments – BOS Mechanical Engineering, BOS Electronics / E&TC Engineering, BOS Instrumentation & Control Engineering, BOS Computer Engineering, BOS Industrial / Production Engineering and BOS Chemical Engineering, along with non program offering Department viz. Department of Engineering, Sciences and Humanities (DESH). The Head of Department is the Chairman of the respective Board of Studies. The Academic Board policies

are implemented at the programme level through respective Board of Studies.



For redressal of academic grievance of student, the Institute has an established mechanism. For every division, a class teacher is appointed. The class teacher works as a counselor to address the issues reported to by the students. Based on the gravity of the grievance, the issue is handled and resolved by the college authorities.



d) Academic Calendar

The Teaching – Learning for Semester is carried out for minimum 90 working days / Semester as per University Grants Commission (UGC), All India Council for Technical Education (AICTE) and University of Pune norms. The Institute plans its academic calendar for the forthcoming academic year well in advance and adheres to the same. The academic calendar typically covers the following activity details :-

- College re-opening after vacation
- Students' registration and Director's address
- Teaching Learning activities – inclusive of Remedial teaching
- Examination and Assessment Schedule
- Student Activity Details
- Schedule of various meetings / Audits etc.
- Vacations and holidays

The academic calendar is designed so as to provide 10 week Summer break, 2 week Winter break and 2 week Diwali break.

The students utilize the internationally compatible 10 week Summer break for internships in India and abroad or development of project or for a substantial co-curricular or extra-curricular activity development.

The student activities such as Mélange – The national level flagship activity of the Institute, Annual Social Gathering, Vishwakarandak – the Inter-Departmental student fest are all included in the academic calendar.

III) Curriculum / Program details

a) Structure and Syllabus for program of study :-

The typical structure for a semester in any programme of study consists of the following minimum courses :-

- i) 5 core theory courses –
 - a. 4 Departmental Core
 - b. 1 Interdepartmental / Honors / Minor
- ii) 5 Laboratory courses –
 - a. 2 Department Core
 - b. 1 Skill Development / Professional Development lab
 - c. 1 General Proficiency lab
 - d. 1 Major Project (From T.Y. B.TECH. Sem II to FINAL YEAR B.TECH. Sem. II)
- iii) 2 Theory course tutorials

- iv) 1 Mini Project based on courses in Sr. No. (i) above for F.Y. B.TECH., S.Y. B.TECH. and T.Y. B.TECH. students.
- v) Comprehensive viva-vocé as a part of assessment on courses identified by respective BOS.
- vi) General Proficiency, Open Elective and Communication & Soft Skill Courses for F.Y. B.TECH. students
- vii) Communication & Soft Skill Courses for S.Y. B.TECH. students.
- viii) Skill Development courses for S.Y. B.TECH. students.
- ix) Professional Development courses, technical seminar and Stage-I of the major project for T.Y. B.TECH. students.
- x) Stage-II and Stage-III of the major project for FINAL YEAR B.TECH. students.

The year-wise break up of credits for all applicable patterns for all branches is as under :-

	Prev		Present		Next
PATTERN	F.Y. B.TECH.	S.Y. B.TECH.	T.Y. B.TECH.	FINAL YEAR B.TECH.	
F-11	46	46	44	42	
A-14	46	52	50	42	
B-14	48	50	50	42	
A-16	48	50	50	42	

For every programme, Programme Educational Objectives (PEO) are defined by the respective Boards of Studies. Program Educational Objectives are the broad statements that describe the career and professional accomplishments that the program is preparing the graduates to achieve.

For every theory, practical, tutorial course, the course objectives are defined. It is ensured that the course objectives are in synchronization with the Programme Educational Objectives.

The typical syllabus for a theory course consists of 5 units – Unit I to Unit V. Each unit is divided into the core conceptual part with some applications as part A and the applied part or some additional applications as part B. Part A – to be taught in class and

Part B is designed for learning beyond syllabus. Students are expected to submit Home Assignments, which focuses on teaching – learning beyond the syllabus, as scheduled. To take cognizance of the learning beyond syllabus, 10% – 15% question in ESE are reserved for Part B.

The structure and syllabi for the programmes offered by the Institute are available on the Institute website, <http://www.vit.edu/index.php/downloads/syllabus>

b) Patterns :-

The structure review takes place every 3 years. The initial autonomous structure was implemented in July 2008. A subsequent revision took place in July 2011 and in July 2014. For ease of examination, assessment, transcripts and other relevant purposes, every incoming batch is assigned a pattern which is a unique identifier for the structure and syllabus to be implemented for the said batch during the four years of engineering course. The patterns effective for academic year 2016 – 2017 are as under :-

Year of Study	Pattern
F.Y. B.TECH.	A-16
S.Y. B.TECH.	B-14
T.Y. B.TECH.	A-14
FINAL YEAR B.TECH.	F-11

c) Coding Scheme :-

The Institute offers diverse types of courses. In order to distinguish the courses, while maintaining their uniqueness, an alphanumeric coding scheme is designed. It is as under :-

Consider a 7 character alphanumeric entry XX12345 where first two characters (XX) represent BOS name; third character (1) indicates year of course; fourth character (2) indicates subject category; fifth character (3) indicates subject sub-category and last two characters (45) indicate subject number.

The abbreviations for the various BOS are as under :-

	BOS
CS	BOS, Computer Engineering
EC	BOS, Electronics Engineering
HS	BOS, Department of Engineering, Sciences and Humanities
CH	BOS, Chemical Engineering
IC	BOS, Instrumentation & Control Engineering
ME	BOS, Mechanical Engineering
IP	BOS, Industrial Engineering

Year of course is :-

Number	Year
1	First Year of Tech. – UG
2	Second Year of Tech. – UG
3	Third Year of Tech. – UG
4	Fourth Year of Tech. – UG
5	First Year of Tech. – PG
6	Second Year of Tech. – PG
7	Third Year of M.C.A. program
8	Course work for Ph.D. program (As applicable)

Various subject categories are :-

Number	Subject Category
0	Department Courses
1	MD / Multidisciplinary courses
2	EL / Department Elective Courses
3	Institute Level Elective Courses
4	Skill Development (SD) courses
5	General Proficiency (GP) courses
6	Open Elective (OE) / HSS courses
7	Seminar & Project Work
8	Honors Courses
9	Minor Courses

The subject sub-category coding is as shown :-

Number	Subject Sub-Category
0	Sit-through
1	Theory
2	Tutorial
3	Laboratory
4	Comprehensive Viva Voce (CVV) / Oral
5	Passed (P) / Not Passed (NP) Grade only
6	Audit course
7	Group Credits

d) Minimum credit requirements and individual academic planning (Fast Learner, Slow Learner, etc.)

The minimum credits to be earned to acquire a Bachelor of Technology degree by a student admitted in F.Y. B.TECH. is 190.

The minimum credits to be earned to acquire a Bachelor of Technology degree by a student admitted under Second Year Direct Admission (SEDA) is 142.

Average number of credits offered per semester is 24. The meritorious student having excellent academic performance till Second Year can register for 8 additional credits each in the subsequent three semesters as per the advice of Chairman – BOS / Faculty advisor and meet with the minimum credit requirements. The last six months may then be used for industry internship by the candidate. Such student is considered as ‘fast track’ student. However, the degree is awarded at the end of four academic years only.

Course drop facility is also provided for less performing students. As per the advice of Chairman – BOS / Faculty Advisor, such student may register for the backlog courses instead of regular courses so as to enhance the academic performance in future. Such student can earn the minimum credits in a span of eight academic years.

e) Objectives of various courses and their implementation details –

i) General Proficiency (GP)

Institute offers General proficiency courses in First and Second year engineering. The objectives are:-

- Improve the overall personality of the student
- Inculcate other personality traits such as street smartness, Communication skills and General awareness etc.
- Introduce courses which complements Engineering learning

- Release mental stress
- Contribute to social issues through group dynamics courses
- Large number of options are available to the students to choose subjects from four categories viz Soft Skills, Hobby, Health and International Languages.

The list of courses under General Proficiency is attached in Appendix A.

ii) **Skill Development (SD)**

Skill Development courses are offered in First and Second Year engineering. The objectives are :-

- To enhance the analytical and psychometric skills of the students as per current Industrial Trends.

iii) **Professional Development (PD)**

Professional Development courses are offered in third year. Expert resource persons from industry are invited as visiting faculty for these courses. Faculty from the Institute with additional professional knowledge also contribute in these subjects.

Objectives are:

- Bridge the gap between industry and institute.
- Study subjects as per current industrial trends.

iv) **Open Elective courses (OE)**

- To supplement the technical knowledge in the field of engineering, and to prepare a responsible citizen, courses such as Sociology, Psychology, Philosophy and Environmental Studies are taught.
- The commercial knowledge essential for the Engineer is also provided through courses like Economics, Management Techniques, Cost & Accounting, Law

v) **Communication & Soft Skill (CSS)**

Institute offers Communication & Soft Skill courses in First and Second year engineering.

Objectives are:

- To understand the basics of different parts of speech
- To improve speaking, reading, writing and listening skills
- To develop the overall personality of the student
- To inculcate organized reference search and presentation of summary in an effective manner

The list of courses offered under Communication and Soft Skill is as follows :-

- i) Communication Skill
- ii) General Seminar - I
- iii) Technical Writing
- iv) General Seminar - II

vi) **Mini-Project (MP)**

From F.Y. B.TECH. to T.Y. B.TECH. Semester – I, a Mini Project is to be carried out in every Semester. The objectives behind the Mini Project are:

- Scope for creativity
- Hands on experience
- Academic occupancy
- Group Activity

vii) **Comprehensive Viva-Voce (CVV)**

To test the spoken skills of the students and the ability to think logically under time pressure, a comprehensive Viva Voce is conducted for the students in both Semesters of S.Y. B.TECH. and T.Y. B.TECH.

The examination is based on identified courses decided by the respective Board of Studies.

The examination has a separate Passing Head

CVV proves extremely useful for placement Interviews.

viii) Seminar (TY.B.Tech. Semester I)

A technical seminar is to be delivered by every student in T.Y. B.TECH. Semester I. The objectives behind the technical seminar are :-

- To inculcate the reference search and effective technical précis writing skills among students
- To enhance time management and presentation skills
- To strengthen the literature survey and other research attributes essential for Major project activity

ix) Major project

A Major project activity starting from T.Y. B.TECH. Semester II up to FINAL YEAR B.TECH. Semester II (a 3-stage project) is carried out.

The students typically undergo group formation, area finalisation; design and development; testing, generation and verification of results, research publication procedure.

f) Opportunities for additional learning – Honors / Minor stream

The Institute has a unique academic feature i.e. Honors / Minor stream which serve as an unique opportunity for additional learning. The Honors stream provides an opportunity for the eligible student to explore specialization in the domain area.

The Honors stream enhances employability in core areas. It produces a focused output, enhancing suitability for a Master's Degree in Engineering / Technology. It also adds uniqueness to the resumé.

The Minor stream has a thrust in inter-disciplinary knowledge acquisition. It is observed to enhance employability in technical areas where diverse skills are required to be applied in practice. Minor stream is the opportunity for the student to obtain exposure to other engineering disciplines of their choice.

The Honors / Minor stream provides an opportunity to student to earn 10 additional credits.

The very fact that Honors / Minor stream is being offered is a unique academic practice of the Institute and that the stream contains theoretical as well as experiential learning opportunity makes it even more special. The concept is well received by the students since January 2012 and a large number of second year students opted for the additional credit earning facility through Honors / Minor stream. For the Honors / Minor stream to be launched from July 2015, various Honors / Minor streams offered (with applicable eligibility requirements – academic as well as branch specific) are as follows :-

i) Honors streams

Sr. No.	Name
1)	Mechanical – Automobile Engineering
2)	Mechanical – Aerospace Engineering
3)	Electronics - VLSI
4)	Electronics – Embedded Systems
5)	Electronics – Wireless Communication
6)	Computer – Networks
7)	Instrumentation – Electronic Product Reliability and Testing
8)	Chemical – Chemical Engineering
9)	Industrial – Industrial Engineering

ii) Minor streams

Sr. No.	Name
1)	Instrumentation - Industrial Automation
2)	Computer - Computer Engineering
3)	Industrial – Industrial Management

The academic performance of the student in the chosen Honors / Minor stream is shown in the comprehensive statement of grades issued at the time of graduation.

The academic performance in Honors / Minor does not influence the CPI calculation of the 8 semesters.

A separate CPI is calculated for the entire stream after the student earns the requisite 10 credits.

g) Summer term facility

For F.Y.B.Tech and Final Year B.Tech. Courses, an additional make-up semester facility, known as Summer Term, is tentatively conducted from last week of May till last week of July.

h) International Relations Cell activities for students

The Institute provides an unique opportunity to deserving students to attend one semester in leading engineering institutes in France and Canada under Student Exchange Program. The Institute has tie-up with Groupe des Ecole des Mines (GEM), a conglomerate of leading engineering institutes in France, wherein, the selected students spend T.Y. B.TECH. Semester II in the chosen Institute. The Institute is also a member of the Ontario-Maharashtra-Goa (OMG) student activity. As a part of this activity, the selected students spend T.Y. B.TECH. Semester I in one of the 17 universities in the Ontario region in Canada.

A thorough procedure is carried out for selection of students on the basis of academic performance, personality, international exposure, aptitude, willingness and adaptability, etc. An academic equivalence is set up by respective Board of Studies and the students register for recommended audit courses before the departure or upon arrival. The student performance during the Semester abroad is also scrutinized and on that basis, the requisite credits applicable for the semester are transferred to the student.

So far, 93 students are benefitted from the student exchange program since 2009 till July 2016. Many such students have secured admissions to international institutions of repute wherein, their international exposure as a part of the scheme has proven to be a decisive parameter.

Reciprocally, the students from Polytech Nantes have come to VIT for internship activities.

The Institute has an established International Relations Cell through which conscious efforts are taken to seek academic partnership with internationally reputed universities.

The Institute has established a 2 + 2 twinning program with Penn State University, Marist College, Poughkeepsie, New York and State University of New York at Binghamton in USA. The students complete Semester I to Semester IV in VIT, Pune and Semester V to Semester VIII in these foreign universities.

Institute has signed an MoU for two-stage Master's program with Asian Institute of Technology, Thailand, wherein, students complete one year in VIT, Pune and one year in AIT Thailand.

Institute has established joint International Engineering Research Centre (ERC) in association with State University of New York at Binghamton and Anveshak Technologies, USA.

The Institute plans to establish an Incubation Centre and Post-Graduate research facility through this ERC in 2016-17.

The Institute has taken conscious efforts to train its promising faculty and aspiring students under the tutelage of faculty of international repute during the summer and winter breaks. As a part of this initiative, Prof. (Dr.) Onkar Sharma - Marist College has conducted a four week extensive training program on "Operating Systems".

To spread the benefits across to the Systems branches as well, international faculty interaction in areas of Heat Transfer, Statistical Methods & Research Methodology, Design of Machine Elements, VLSI Design and Nano Technology, eminent faculty, Prof. Bruce Murray, Prof. Mohammed Khasawneh, Prof. Roy McGran, Prof. Zhanpeng Jin from State University of New York at Binghamton and Prof. Louis Hornyack from Asian Institute of Technology, Bangkok, visited Institute since Academic Year 2013-14.

i) Issue of Transcripts

Transcripts are usually issued when the graduating students seek admission for higher studies in India and abroad.

It is a reflection of the University, Institute information, the salient features of the program of study; teaching and examination scheme applicable for the student under the Autonomous format, etc. It is supplemented by certified Grade Sheets of the candidate. The transcripts, at times, are used to procure scholarships as an authentic document.

The Institute has a policy of issuing transcripts to all graduating students upon request as per the office procedure.

IV) Assessment and Examination

a) Formative Assessment -

As a part of the Joyful Learning Model, the Institute has designed an assessment scheme that ensures regular studies during the course of semester. This formative assessment mechanism is to ensure:-

- i) Continuous Teaching – Learning Assessment
- ii) Obtaining regular feedback from students

Continuous assessment is carried out as Teacher's Assessment and Mid-Semester Examination. The Teacher's Assessment component focuses on the students' performance in Class Test based on Unit I, Home Assignments on self study components of all 5 units and an objective type online Mid Semester Examination on Unit II and Unit III.

For laboratory courses, the performances of each experiment are assessed on a weekly basis.

b) Summative Assessment -

The overall understanding of the theory course is assessed by means of the conventional 3 hour End-Semester Examination paper of 100 marks for all applicable courses. Here, paper is set up on all

5 units and, it is ensured that an equal overall emphasis is given on all 5 units, considering Class Test and Mid-Semester Examination. Based on the nature of theory course, instead of setting up memory recall type questions, Bloom's Taxonomy guidelines are used and an appropriate paper which tests design, analysis, simulation, application, logic, reasoning, quantitative skills, abilities of student, etc. is set up. Such careful in-depth thinking and thorough preparation for the summative assessment is another unique academic feature of the Institute.

For laboratory courses, the overall understanding is assessed at the end of the term by setting up a practical or oral examination for the given course.

As a part of the summative assessment a comprehensive viva-vocé is also conducted for the S.Y. B.TECH. and T.Y. B.TECH. students to gauge the knowledge and understanding of the courses learnt in the semester.

c) Mode of evaluation for theory course

For a typical theory course, the student earns an appropriate grade based on the marks scored during the Semester. The formative and summative assessment components are combined to generate the total marks out of 100. The breakup is as under :-

Parameter	Marks
i) Teacher's Assessment	30
ii) Online Test	20
iii) End Semester Examination	50
TOTAL	100

i) The Teacher's Assessment marks are based on the student's performance in tutorial, Home Assignments and Class Test. The breakup is as follows :-

Parameter	Marks
Class Test	30
Home Assignment	30
Tutorial (if applicable)	10
TOTAL	60 or 70

The mode of conduct of the class test is decided by the faculty / group of faculties teaching the course. The mode of such class test could be a multiple choice based objective exam, a quiz, an online examination, etc. The student is expected to earn 12 marks out of 30 in the Class Test. In case of failure, as a corrective measure, a repeat Class Test is arranged for such students. This is a conscious step taken by the Institute as formative assessment so as to give learning opportunity to students.

Five Home Assignments – on part B of each Unit, worth 6 marks each, is set up by the faculty and is assessed regularly.

Tutorials are carried out in a batch size of 15 to supplement the theory course and to ensure one to one interaction with the student. This exposure and informal interaction with the faculty boosts the students' confidence. Tutorials are evaluated and at the end of the semester, a net score out of 10 is calculated.

The total 60 or 70 marks thus obtained, are converted to 30 in the final calculations.

ii) In the online objective type Examination, multiple choice based questions with varying degree of difficulty are set up. Proportionate number of questions with variable degree of difficulty is selected from the pool of questions set up by the faculty.

The total number of questions for Unit II and Unit III is 10 each. Each of the 20 questions is worth 1 mark and there is a negative marking of - 0.25 marks for every wrong answer.

iii) The End Semester Examination paper is a typical 3 hour - 100 marks question paper. As mentioned earlier, references from Bloom's Taxonomy are taken to challenge the various engineering skills appropriate for the said course while setting the paper. The score out of 100 is converted to an equivalent score out of 50.

d) Mode of evaluation for laboratory course

For a typical laboratory course, the student earns an appropriate grade based on the marks scored during the course of the Semester. The formative and summative assessment components are combined to generate the total marks out of 100. The breakup is as under :-

Parameter	Marks
i) In Semester Assessment	70
ii) End Semester Assessment	30
TOTAL	100

i) The In Semester Assessment (ISA) is the formative mode used for assessment of performances in each laboratory assignment. A typical laboratory course contains 10 experiments. Assessment out of 10 marks is carried out for each experiment.

The total 100 marks thus obtained, are converted to 70 in the final calculations.

ii) The End-Semester assessment is carried out by means of practical examination or oral examination appropriate to the nature of laboratory course. Typically, the student performance is evaluated out of 100 marks.

The total 100 marks thus obtained, are converted to 30 in the final calculations.

e) Mode of evaluation for seminar

The students give a technical seminar in T.Y. B.TECH. Semester I. The Seminar progress is reviewed during the Mid-Semester Examination as per the academic calendar. For poor performing students identified by the examination panel, a second review is taken. In the reviews, the applicability and relevance of the topic, etc. is discussed. The seminar is presented at the end of the semester. The seminar evaluation scheme is as follows :-

Parameter	Marks
i) Attendance during Semester	10
ii) Attendance during Seminar presentation – Self and Peer	10
iii) Relevance of Seminar topic	10
iv) Timely abstract submission	10
v) Literature review	10
vi) Technical contents	10
vii) Presentation	25
viii) Question and Answer Session	15
TOTAL	100

f) Mode of evaluation for Mini Project

Mini project is carried out by students of F.Y. B.TECH., S.Y. B.TECH. and T.Y. B.TECH. Semester – I in each semester based on the relevant courses registered in that semester. Group formation, discussion with faculty advisor, formation of the mini project statement, resource requirement identification and implementation of the mini project using laboratory resources is carried out systematically.

50 marks are awarded as continuous assessment for the activities mentioned above.

Based on the submitted Mini-Project report, Oral Presentation and demonstration before a panel of examiners at the end of the semester, 50 marks are awarded as End Semester Assessment. The overall score out of 100 is considered for allocation of appropriate grade.

g) Mode of evaluation for Comprehensive Viva Voce

A comprehensive viva voce is carried out after the End Semester Examination for S.Y. B.TECH. and T.Y. B.TECH. students. It is based on the appropriate theory and / or laboratory courses identified by the respective Board of Studies. An expert from industry / faculty from institute of repute is appointed as the external examiner.

An overall evaluation out of 100 is carried out by the panel.

A separate passing head is assigned for comprehensive viva voce, i.e. the student may clear the relevant theory courses / laboratory courses but, may have to carry a backlog of the comprehensive viva voce based thereupon, owing to the lack of performance in the viva voce.

h) Mode of evaluation for Major Project

The major project activity is carried out from T.Y. B.TECH. Semester II. The major project comprises of 3 stages. Stage I is carried out in T.Y. B.TECH. Semester II, Stage II is carried out in FINAL YEAR B.TECH. Semester I and Stage III is carried out in FINAL YEAR B.TECH. Semester II.

In the major project, the student group is expected to apply the engineering principles learnt during the studies and produce a result oriented output.

The evaluation of project stage I is based on the following parameters :-

Parameter	Marks
i) Group formation and attendance / reporting to guide	20
ii) Topic finalisation / Topic statement	20
iii) Literature survey	20
iv) Abstract	20
v) Presentation	20
TOTAL	100

Project Stage II and Project Stage III evaluations are based on department specific norms. The details can be obtained from the respective Head of Department and / or Project Guide / Supervisor.

i) Grading Scheme

The marks obtained by the student in various courses as per the assessment scheme mentioned above are graded relatively. The Institute offers the following 7 passing grades and 2 failure grades along with some specific grades for detention, absenteeism, etc. The grading system is as follows :-

Letter Grade	Grade Point	Performance
AA	10	Excellent
AB	9	Very Good
BB	8	Good
BC	7	Fair
CC	6	Above Average
CD	5	Average
DD	4	Below Average
FF	0	Fail (Re-register the course)
AP	---	Audit Course Passed
II	---	Absent
XX	---	Detained (Re-register the course)
PP	---	Passed (Only for Non-Credit courses)
NP	---	Not Passed (Only for Non-Credit courses)

The students are given XX grade on account of non-compliance to the attendance norms set up by affiliating University.

j) Calculation of Semester Performance Index (SPI)

Based on the grade obtained and its mapping with the Grade Point Average (GPA) as mentioned above, a Semester Performance Index (SPI) is calculated. A student having earned all the credits gets the SPI applicable for the performances in that semester. It is shown in the statement of grades provided to the student at the end of Semester.

Case Study

Consider the performance of a student as under :-

Subject	Type	Credits	Letter Grade	Grade Point
S ₁	TH	3	AA	10
S ₂	TH	3	AB	9
S ₃	TH	3	BB	8
S ₄	TH	3	AB	9
S ₅	OE	2	BC	7
P ₁	Lab.	1	AB	9
P ₂	Lab.	1	BB	8
T ₁	TU	1	AA	10
T ₂	TU	1	AB	9
GP ₃	GP	1	BC	7
CVV ₁	CVV	2	CC	6
MP ₃	Proj.	2	BB	8

SPI is calculated as :-

$$SPI = \frac{(GP_1 \times C_1) + (GP_2 \times C_2) + \dots + (GP_n \times C_n)}{C_1 + C_2 + \dots + C_n}$$

Therefore, for the case mentioned above, SPI would be

$$SPI = \frac{30 + 27 + 24 + 27 + 14 + 9 + 8 + 10 + 9 + 7 + 12 + 16}{23}$$

$$= \frac{193}{23} = 8.39$$

k) Calculation of Cumulative Performance Index (CPI)

Based on the SPI obtained in each semester, a Cumulative Performance Index is calculated as the running average of SPI obtained till that Semester. The CPI obtained at the end of the 8th Semester is considered as the final CPI.

For the student admitted in First Year of Engineering, it is the running average of 8 SPIs from F.Y. B.TECH. Semester I to FINAL YEAR B.TECH. Semester II.

For the student admitted under Second Year Direct Admission (SEDA), it is the running average of 6 SPIs from S.Y. B.TECH. Semester I to FINAL YEAR B.TECH. Semester II.

Case Study

Consider the performances of a graduating student as under :-

Semester	SPI	CPI
F.Y. B.TECH. – Semester I	8.46	8.46
F.Y. B.TECH. – Semester II	8.74	8.60
S.Y. B.TECH. – Semester I	9.02	8.74
S.Y. B.TECH. – Semester II	8.84	8.77
T.Y. B.TECH. – Semester I	9.12	8.84
T.Y. B.TECH. – Semester II	8.62	8.80
FINAL YEAR B.TECH. – Semester I	9.06	8.84
FINAL YEAR B.TECH. – Semester II	9.24	8.89
FINAL CPI		8.89

A consolidated Statement of Grades is provided to the student upon completion of minimum credit requirement at the time of graduation. The consolidated statement of grades shows the performance of the student in all courses registered for during the 8 semesters. It also states the performance of the candidate in other optional courses such as Honors / Minor stream, sit-through courses, audit courses, additionally registered courses, etc.

This unique document helps the student showcase the overall performances, the subject studied along with other details.

l) Measures to control Academic Malpractices

Every student during term of the examination is under the disciplinary jurisdiction of the competent authority that takes appropriate action in case of indiscipline or misconduct on part of student.

The competent authority during the actual conduct of examination appoints a junior supervisor, senior supervisor & flying squad and ensures that examinations are conducted as per the laid down norms. It also checks the students trying to resort to malpractices at the time of examination. The squad also ensures that only the duly authorized candidates have appeared for the concerned examinations.

A lapses committee handles the cases of malpractice reported by the supervisors or flying squad. The Committee handles various types of malpractices resorted to by the students such as possession of copying material, actual copying from the copying material, possession of another student's answer book, mutual copying, etc. A reasonable opportunity including oral hearing is given to the student in his / her defense before the Committee. The Committee then submits its recommendation to the competent authority which, in turn, issues final orders with regards to suitable penal action such as annulment of performance of the student in full or in part in the examination, debarring the student from

appearing for any examination, imposing fine as an additional punishment, etc.

m) Answer script retention

Answer scripts for summative examination are stored for a period of 6 months after the examination by the Examination Section.

n) Class Improvement

It is unanimously resolved that CPI improvement will be allowed to :

- (1)
 - (a) Student who has earned all prerequisite credits as applicable and are otherwise eligible to be awarded the Bachelor's Degree and declared pass.
 - (b) Student: with CPI < 6.75
 - (c) has submitted previous Grade Sheet and Degree Certificate to College Office.
 - (d) has minimum 75% attendance for all Theory Courses considered for CPI improvement.
 - (e) has satisfactorily completed teaching – learning process for every registered course and has undergone all In Semester and End Semester Assessments.
 - (f) has appeared for T.Y. B.TECH. & FINAL YEAR B.TECH. Theory Courses adding upto minimum 1/3rd credits of Theory Courses rounded upto next integer.
 - (g) has submitted undertaking to College Office about CPI Improvement Rules.
- (2) CPI improvement will be permitted within 5 years after completion of graduation.

- (3) Maximum 3 attempts will be allowed for CPI improvement.
- (4) The Student has to re-register for minimum number of credits equal to $1/3^{\text{rd}}$ of the total Theory Credits for Third Year and Final Year Courses offered by Board of Studies at the time of Class improvement attempt taken together, rounded off upto next integer for U.G. Courses offered by Board of Studies at the time of Class improvement attempt taken together, rounded off upto next integer.
- (5) One attempt is equal to registration for minimum number of credits as mentioned above
- (6) For every attempt the student must register for the minimum number of credits.
- (7) Student CPI improvement will be considered for :
 Case- 1 : Student having previous CPI < 6.25 and after improvement CPI is equal to or more than 6.25
 or otherwise the performance for this attempt will be made Null & Void.
 Case- 2 : Student having previous CPI < 6.75 and after improvement CPI is equal to or more than 6.75
 or otherwise the performance for this attempt will be made Null & Void.
- o) Examination and assessment policy for failure students**
- i) For securing admission to Third Year (T.Y. B.TECH.), the student must have earned all the credits of First Year (F.Y. B.TECH.) as per applicable pattern.
- ii) For securing admission to Final Year (FINAL YEAR B.TECH.), the student must have earned all the credits of Second Year (S.Y. B.TECH.) as per applicable pattern.
- iii) The student failing to meet condition (i) or (ii) above, is expected to re-

register upto 30 credits in a semester (FF and FR taken together) for the backlog courses during the next academic year as and when the courses are offered and examinations are conducted. Once the said credits are earned, the student may register for courses of the next year (T.Y. B.TECH. or FINAL YEAR B.TECH. as applicable) only in the subsequent academic year.

p) Extra Credits

A student planning to take extra credits may be considered under following categories :

- (a) A student carrying a backlog and re-registering for the previous course – Re-registration charges as applicable. Consideration of all courses registered for during that Semester of Academic Year for SPI calculation.
- (b) Student planning to take extra courses as a fast track opportunity – Administration, processing and examination charges will be considered. In any case the student has to pay the college fees for four years. This fast track facility would enable the student to undergo an industrial training, an exchange programme, research contribution in I.I.T. under scheme such as KVPY without any academic compromises for credit transfer. The phase wise development and completion of project activity cannot be considered at an accelerated pace under fast track scheme. The registration under fast track is subject to having a CPI 8.0 or above and no backlog for consideration of registration to an additional course.
- (c) Students opting for earning extra credits by selection of courses in addition to the courses prescribed by respective BOS, which are single Semester activities and not the part of Honors / Minor scheme. Such students will be expected to pay charges equivalent to re-registration (proportionate credit based

payment). The registration for such courses is subject to permission given by the Chairman BOS of the Board in the purview of which the subject is identified. Such permissions will be given based on meeting with prerequisite subject.

1. In any case (a), (b) or (c) the candidate cannot register for more than 10 credits.

2. A suitable reflection of completion of the said course will be made in the candidate's Grade statement.

For part (c) a separate grade & GPA will be calculated. That GPA will not be clubbed with the other regular courses for SPI, CPI calculation.

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