

# Choice Based Credit System (CBCS) - An Experiential Learning Approach At RIT

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**Abstract**—Being an Autonomous status, Rajarambapu Institute of Technology (RIT), Rajaramnagar has incorporated many initiatives in academics by keeping in view current global scenario. Choice Based Credit System (CBCS)- An experiential model is one of the initiative. This paper includes details of CBCS incorporated for first year to Final Year B. Tech students along with challenges faced during implementation. It has been observed that inclusion of CBCS in academics has improved the placement, number of students admitted for higher studies and entrepreneurs.

**Keywords**—Autonomous; Academics; Choice Based Credit System; Placement; Higher studies; entrepreneurs.

## I INTRODUCTION

University Grants Commission (UGC) and Shivaji University Kolhapur accorded the status of academic autonomy to RIT from the year 2011-12, which we look towards a great opportunity to design curriculum sensitive to needs of Business and Industries. The RIT model of autonomy focuses on experiential learning which believes in learning by doing. This is achieved through hands on experience, industrial assignments, mini projects and live problem solving.

Unlike traditional classroom situations where students may compete with one another or remain uninvolved or unmotivated and where the instruction is highly structured, students in experiential learning situations cooperate and learn from one another in a more semi-structured approach. Instruction is designed to engage students in direct experiences which are tied to real world problems and situations in which the instructor facilitates rather than directs student progress[1].

Experiential learning experiences [2] help to complete students' preparation for their chosen careers which reinforce course content and theory. Students learn through student- rather than instructor-centered experiences by doing, discovering, reflecting and applying. Through these experiences students develop communication skills and self-confidence and gain and strengthen decision-making skills by responding to and solving real world problems and processes.

By keeping in view this aim of experiential learning RIT took an initiative to enhance better learning by doing

experience. This initiative includes Choice Based Credit System (CBCS)

## II WHY CHOICE BASED CREDIT SYSTEM:

- i. The CBCS offers a 'cafeteria' approach in which the students can choose courses of their own choice.
- ii. They can learn at their own pace because one size is not fit all
- iii. Students need to be satisfied as per aspirations. The CBCS system allows a student to study what he prefers in his own sequence as per his interests.
- iv. Students can also opt for an interdisciplinary approach to learning.
- v. The system improves the job opportunities of students.
- vi. The system will help in enabling potential employers assess the performance of students on a scientific scale.

## III CHOICE BASED CREDIT SYSTEM (CBCS) AT RIT:

RIT has designed and incorporated Choice Based Curriculum structure for Engineering and MBA students by keeping in view the need of current Global scenario and enhance the skill sets of students by experiential learning technique. Choice based structure for all four years of Engineering includes following developments.

### A. CBCS for First Year B.Tech:

Languages like Japanese, German and English are incorporated in curriculum of First year Engineering Students. Wherein students need to select one language for study. Also, two electives are offered to F.Y. students. First elective includes Basic engineering courses like Green Technology, Basic Automobile Engineering, Engineering Materials, Thermodynamics, Basic Mechanical Engineering, Basic Electrical Engineering, Basic Civil Engineering etc. Second elective includes Social science and management courses like principles of Management, Marketing Management, Financial Management, RTI & Human rights,

Constitution of India, Engineering Economics, Multimedia and mass communication, Intellectual property rights, Event & Hospitality Management, Introduction to psychology etc.

Engineering Exploration and Design project is included in the curriculum of First year B.Tech to develop multidisciplinary approach. Under this project two labs have been developed. One is Learning studio wherein students of first year get exposure of fundamentals of Mechanical, Electronics, Data acquisition system, mechatronics, project management, engineering ethics etc. And second is Think Ring Lab, wherein students are availed with equipment's and tools to do the projects.

#### *B. CBCS for Second Year B.Tech:*

For second year engineering students Professional Skill Development courses like Personal Effectiveness and Body Language, Interpersonal Skills, Leadership and Public Speaking, Corporate Competency, Jeevan Vidya Mission-“work life balance” are included in syllabus to make student competent enough in their carrier. Jeevan Vidya Mission-“work life balance” subject addresses on aspects like how to create a work-life balance, relationship problems, and other day-to-day challenges. Total 588 second year students underwent through these courses in academic year 2017-18.

Students of Second year B.Tech are expected to do environment project which helps them to understand how their actions and decisions effect on environment and develops skills necessary to address complex environmental issues, as well as learn ways of action to be taken to keep environment healthy and sustainable for the future.

#### *C. CBCS For Third Year B.Tech:*

For third Year students, Program Electives are included in curriculum. Students can select one program elective from given list as per their requirements and interest. List of program electives (Program specific) is being displayed at the start of semester by respective departments. Also, Scholastic aptitude is made a part of third year syllabus to assess logical reasoning or thinking performance of students.

In the curriculum of third year B.Tech Mini project of respective core domain is included. For Mechanical Engineering Students, Conceive Design Implement Operate (CDIO) initiative is implemented.

#### *D. CBCS for Final Year B.Tech [3]:*

For final year B. Tech and MBA courses a major change is incorporated in syllabus which includes choice based four track systems. Under this system, students can select one choice from,

- Industry Internship & Project (IIP)
- Undergraduate Research Experience (URE)
- Entrepreneurship Development (ED)
- Regular capstone project (CP)

#### **D.1 Industry Internship & Project (IIP):**

Internship is designed to expand the depth and breadth of academic learning of students in their areas of study. It is an opportunity for students to receive experience in applying theories learned in the classroom to specific experiences in the community and work world. An internship can also heighten awareness of community issues, motivate students to create opportunities, embrace new ideas, and give direction to positive change. A successful internship can give valuable information in making decisions about the direction of future studies or employment. An internship is an opportunity not only to use and develop industry-related knowledge and skills, but also to enhance some of the skills that are transferable to any professional work setting.

Students from Final Year B. Tech are eligible to do this internship. Selected candidates by college will be permitted for internship of minimum 20 weeks in 8th semester. During this Internship it is expected that students should identify the problems arising in the industry related to Engineering and they must give the solution to the company.

During Internship & Project Students should follow following guideline:

- a. After joining the industry students should learn all the departments and their workings. Also, student should understand how each department of industry is interlinked with one another.
- b. Student should correlate the theoretical aspects learned in academics with industry practices.
- c. Students should gain a knowledge of new technologies which industry follows.
- d. Students should follow the professional codes and ethics which industry follows.
- e. Students should follow all rules and regulations of industry. Special care should be taken regarding safety.
- f. When students will start internship, they should search technical problems occurring in the industry and they can select this problem as a project in consult with industry & institute mentors.

#### **D.2 Undergraduate Research Experience (URE):**

For the engineering technology students, research experiences allow them to carry out in-depth study of engineering concepts, while emphasizing hands-on experiences and practical applications. Participating in research projects strengthens the student's resume, and fulfills the requirements of present day employers, who demand sound engineering skills in their employees.

The following is a minimum set of expectations for every student enrolled in this course for credit:

- i) perform a background literature search and review,
- ii.) Develop a project plan,
- iii.) Perform experimental work or applied experimental work,
- iv.) Write and present a research report.

All four of these minimum expectations as well as additional expectations (e.g., attendance at departmental and/or College, research seminars, participation in research group meetings, etc.) are to be clearly established and articulated to the student by the research advisor (Guide) prior to commencement of the research project.

### D.3 Entrepreneurship Development (ED):

For entrepreneurship to take roots in the country and to realize the dream of Make in India, it is extremely significant to orient the present generation and the academia towards this discipline. Till a few years back, entrepreneurship was perceived only within the realm of myths and uncertainties; it was not a planned choice for people. However, education in entrepreneurship has brought about a paradigm shift in the awareness quotient of people. Realizing that entrepreneurship Development track has been included in the Eighth semester for B. Tech students.

This program features three modules covering the central challenges of corporate entrepreneurship:

Ideation: How to find great ideas;  
 Incubation: How to develop those ideas into a business;  
 Acceleration: How to launch this new business so that it can merge successfully with the corporate parent.

Objective of this track is that the students develop and can systematically apply an entrepreneurial way of thinking that will allow them to identify and create business opportunities that may be commercialized successfully.

### D.4 Regular capstone project (CP):

Under Regular capstone project students need to do a project in group also learn Program and open electives as per their requirements.

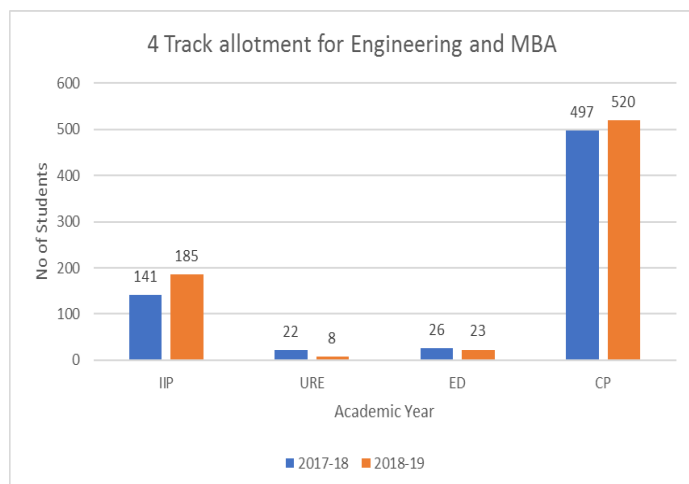


Fig.1 Four track allotments in 2017-18 and 2018-19.

### III. CHALLENGES FACED IN IMPLEMENTATION OF CBCS:

a. As per the rules of Industry internship & project track students need to work in industry for 20 weeks and as per

RIT academics internship period starts from, 1st January. And Most of the industries have set their rules and regulations regarding internship periods. So, RIT faced challenge while allotting industries to students.

b. As 2017-18 was the first year of implementation of four track system for final year students, most of the students were confused about selection of proper choice-based track as an academics. So, RIT took this challenge and counselled students and parents in this regard. From 2018-19 counselling will be done from first year itself to select proper choice-based track.

c. In Under Graduate Research Experience, RIT experienced that students are facing problem in completion of Research project in one semester i.e. eight semesters. This much period is not enough to acquire quality of research work. So, from 2018-19 decision has been taken that most of the research work will be completed in seventh semester.

d. For IIP & URE track, students are expected to complete an online course (MOOCs courses) related to their project. In 2017-18 students selected their courses but some of the students felt the difficulty while studying the online course. After some period, they changed the courses in consult with guides. Also, IIP students did not get time to study online courses regularly as most of the time of these students was invested in industry internship and projects.

e. In four track system Flexibility to choose has shown a lot of enthusiasm and interest in students, which helped to improve learnability in students.

### IV. CONCLUSION:

Due to implementation of CBCS as an experiential module in the academic's, students could learn best when they were personally involved in industry problems, research work and entrepreneurship projects.

Also, implementation of CBCS for Engineering and MBA students helped to improve their performance in various competitive exams and campus placement drives. In 2017-18 a Pool campus drive was conducted by a leading MNC which resulted in selection of 56 candidates, out of which 28 candidates from RIT itself. Also, the selection percentage in a specific company has escalated by 15 -20%. 75 % of students working under IIP choice have higher chances of retention. While, remaining 25% are already been placed in other companies or have shown interest higher studies. Total 277 students are placed in various companies. This number is excluding IIP students. In Current Academic year, 26 students from RIT have qualified GRE/TOEFL/IELETS exams. All are eligible to do higher studies at Abroad. Total 23 students worked under ED choice. These students have ideas of business and about to start their startups. Inclusion of active learning tools in ISE and KRA have increased the results of students. CPI index of students has increased by 5% to 15 % than last three years. Due to Competitive exam preparation cells total 50 students from RIT has secured good ranks in GATE and 27 students qualified to secure admission in abroad for MS. Course end survey taken for choice based four track system (for

academic year 2017-18) has shown 86% course outcome attainment for URE track, 90% for IIP track and 87% for ED track. This is indirect attainment and it will be converted into 30% to add it with direct attainment with 70% weightage taken by assessment of student's work in respective track. It is also observed that attainment of Program Outcomes (PO) has increased in the range of 5% to 10% as compared to academic years 2014-15 to 2016-17. We succeeded to gain improvement in attainment of PO;s like (i) Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings (ii) Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice by 10 % as compared to academic year 2016-17.

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