## Criteria 7.2.1 QIM

**Best Practices at Vidyalankar Institute of Technology**

Vidyalankar Institute of Technology, over a period of 24 years, has developed many best practices which have enhanced the quality of teaching and learning, two of which are explained below:

1. Enhancing Technical Competency through Problem Based Learning
2. Enhancing Learning Experience through Lectures by Faculty of International and National Institutes and Experts from Industry

**1. Enhancing Technical Competency through Problem Based Learning**

**Brief Description of Practice**

At VIT, engineers are nurtured to be solution providers. Problem-based learning (PBL) is a learner-centric pedagogy prevalent at VIT in which our students learn technical concepts through the experience of solving an open-ended problem. In PBL, the teaching strategy is hands-on and experiential learning wherein the course instructor presents a problem to the learner for which a feasible possible solution needs to be generated. Through active learning, the students discover and work with content and technology that they determine is necessary to arrive at a solution. PBL emphasizes self-directed learning (as opposed to rote-learning and recall) and promotes groupwork.

**Process**

In the process, students are given a list of problems to choose from which are well-defined and carefully compiled by the course instructors. Problem statements are identified by current demands in research and industrial applications, and service to community. One major source of PBL statements are published hackathon statements, which are basically derived by industrial experts as per their requirements. The PBL methodology is implemented across all programs and in many courses. It is mandatory inclusion in almost all lab courses. Students discuss the chosen problem statement and list its significant parts and its possible solutions with use of appropriate technological tools. In the process, students gather information and learn new concepts, principles, or skills as they engage in the problem-solving process. Their problem-solving skills are honed through internal hackathons.

**Outcomes**

PBL led to major significant reforms at VIT. By implementing PBL methodology, teachers are transformed to being "facilitators" rather than being mere "disseminators" who will help learners to develop intrinsic interest in the subject through problem analysis, discussion, and implementation of most feasible solutions. Learning through PBL results in enhanced creative thinking skills and enables us to probe the students for higher order thinking skills (like apply, analyze, evaluate, and create). Students get an opportunity to work on real life problems. The emphasis of content delivery is more towards an application-based approach instead of merely teaching theory. One of the outcomes of the implementation of PBL is that over the years, VIT students have been consistently bagging top prizes by winning various prestigious competitions at national level (Smart India Hackathon, Kavach, NABARD Hackathon, Technocians) while solving industry-level problems in software as well as hardware editions. Some examples on which our students provided award-winning solutions are "Financial inclusion in Remote Areas: Digital Financial services for unconnected Regions", "Real time accident identification and alerting emergency systems" by Maruti Suzuki, "Lack of Information about Academic Activities on a single platform" by AICTE.

VIT is equipped with all the resources and the lab infrastructure required for the implementation of PBL which is now a well-established outcome-based and best practice at the Institute.

2. **Enhancing Learning Experience through Lectures by Faculty of International and National Institutes and Experts from Industry**

**Brief Description of Practice**

VIT has always believed in providing an enriched learning experience for our student community. Guest lectures by experts from industry as well as other academic institutions are a well-established practice in the teaching-learning process at the Institute. One guest lecture per course per semester is mandatory since 2014, which is a unique practice at the Institute. Taking this practice to the next level, VIT has initiated a practice of an entire course to be conducted by external instructors from universities abroad or prestigious

academic institutions like IITs or NITs or by industry personnel to enable sharing of cutting-edge technology.

**Process**

Once the course and the appropriate external faculty are identified, the execution of the course is planned and the resources required are identified. The external faculty are supported by an internal shadow teacher, who is assigned to take responsibility for the course operational support and personalized learning assistance of the learners. In case the external faculty member is not always available, the shadow teacher steps in to support the learners in case of queries, assessment, or feedback on projects. The course may be conducted online, offline, or in blended mode. This practice was initiated in the Academic Year 2022-23 at the Institute, and is being implemented for students of second year, third year and final year of engineering.

For instance, the course "Analysis of Algorithm" was conducted by Prof. Dr. Rajiv Gandhi (Professor at Rutgers University) in online mode for the fourth semester students of Second Year Computer Engineering. On similar lines, the course Data Mining & Business Intelligence was conducted by Mr. Vishal Bhalla, CTO of a company based in the USA, in online mode for the sixth semester students of Third Year Information Technology. At the Institute level, the students' learning and assessment were supported by internal faculty from the respective Departments under the concept of shadow teaching for these two courses. As per the Institute's provisions of Autonomous rules and regulations, these faculty have changed the method of evaluation in tune with their pedagogical approach.

**Outcomes**

Such lectures by external instructors are an opportunity for learners to be acquainted with alternative technologies, diverse perspectives, information from varied sources, and sharing of professional experiences by experts. It also offers opportunities to the faculty members to collaborate with external resource personnel and enrich their academic preparation and get valuable exposure to industry applications and experiences. Students' feedback is also observed to be good with such initiatives.