

Two Best Practices of the institution

Best Practice I

1. Title of the Practice:

Outcome Based Education, Assessment and Continuous Improvement- Interpret, analyze and evaluate.

2. Goal: We at Geethanjali believe in the popular adage ‘Nothing is permanent except change.’ The outcome based education helps both the faculty and the learners to understand the desired behavior that is expected of by the end of the course. This practice provides right direction to carefully interpret, analyze and evaluate various situations and changes to me made wherever and whenever necessary. This kind of objective based and outcomes oriented teaching is definitely the need of the hour to provide stable and right direction to implement strategies that facilitate in motivating the students towards their continuous up gradation.

3. Context: With the changing economy and global trends the demand for engineering education is increasing day by day. This has also implications on the intake of the students. Students securing high ranks are also admitted in the course. Apart from that faculty also should be familiar and understand the importance of outcomes based education. Thus rigorous brainstorming sessions and Faculty Development Programs were planned to acquaint the faculty with the need to think on the lines of outcome based education, blended carefully with continuous assessment.

4. The Practice: Outcome based education can be considered as transitional and transmissional approach to the traditional teaching. This paradigm shift in education enables the faculty to closely monitor and mentor the students. It is a unique approach especially in higher education primarily for one reason that there is a close monitoring on the students and also on the implementation of curriculum. Apart from the above mentioned, teaching of human values and professional ethics, awareness among the students about their rich cultural heritage has brought about tremendous change in the mind set of the students.

The OBE approach, or for that matter any approach demands the following three things from both faculty and students.

Faculty should focus on ensuring *learning* rather than teaching

Students cannot learn if they do not *think*

Faculty has a major responsibility to help students *learn how to learn*.

These three things are interdependent. Students should be self responsible and should get continued support from the teacher. This becomes contingent upon the students’ acceptance of this responsibility. While concentrating on outcome based education, the faculty should be

careful to see that their spontaneity is not withered and initiative is not stifled. Learning outcomes and competence descriptors are difficult and time consuming. Since course and curriculum development is an ongoing cycle or process, all objectives and learning outcomes need to be re-appraised continuously at regular intervals.

5. Evidence of Success: The success of any institution is closely and directly connected with the success of the students. The steadily increasing pass percentage is the primary indicator. Secondly, many students are being placed in reputed companies. Majority of the students are also pursuing higher education both in the country and abroad. Evidence of the students who have been self-employed is also a positive indicator. The growing research culture among the students has resulted in two in-house projects by students. These projects have secured recognition from CSI.

6. Problems Encountered and Resources Required.

Less motivation among middle cadre faculty decreases the chances for developing research culture in the institution. Moreover, the government fixes the fee structure for the professional colleges and as a result there is no liberty to fix the tuition fee. There is very little academic freedom. Hence, there is very little scope to implement the changes in curriculum to reduce the gap between academia and industry. Inadequate human resources is also a major problem. This is mainly due to mushrooming growth of engineering colleges. Owing to this quality and qualified faculty are scattered across institutions.

The college firmly believes in providing Outcome Based Education (OBE) clearly focusing and organizing everything in an educational system around "what is essential for all students to be able to do successfully at the end of their learning experiences".

All our programs start with a clear picture of what is important for students to be able to do, then organize the curriculum, instruction, and assessment to make sure this learning ultimately happens. Such an approach presupposes that we can determine what things are “essential for all students to be able to do”, and that it is possible to achieve these things through an appropriate organisation of the education system and through appropriate classroom practices.

It is our conviction that:

- All students have talent and it is the job of colleges to develop it.
- The role of colleges is to find ways for students to succeed, rather than finding ways for students to fail.
- Mutual trust drives outcomes based education.
- Excellence is for every student and not just a few.

- By preparing students every day for success the next day, the need for correctives will be reduced.
- Students should collaborate in learning rather than compete.
- As far as possible, no student should be excluded from any activity in the college.
- A positive attitude is essential. (If we believe that we can get every student to learn well then they will).

We have been striving hard to ensure faculty appreciates the aspect that whatever approach to teaching one may use, it is important to keep the following points in mind:

- ✓ Faculty main focus should be on ensuring LEARNING rather than teaching.
- ✓ Students cannot learn if they do not THINK.
- ✓ Thinking is facilitated and encouraged by the PROCESSES that faculty use to engage students with the content, as well as by the CONTENT itself.
- ✓ The subject/course the faculties teach does not exist in isolation: Faculty have to help students make LINKS to other subjects.
- ✓ Faculties have a responsibility to help students LEARN HOW TO LEARN.

For successful learning to take place, students are encouraged to take some responsibility for their own learning, and continued support from the teacher becomes contingent upon the students' acceptance of this responsibility.

Our outcomes based program includes the following:

1. A clear set of outcomes that all students will achieve (if you like, a minimum set of outcomes). Teachers select, from all the possible outcomes, those that should be given top priority. These are the learning outcomes that will be of most value to the students and are written in a way that the students can understand. We provide examples to students of what they will be able to do when they have achieved those outcomes.
2. A clear set of suitably categorized outcomes for all students. Few additional extension outcomes provide some students with a much deeper understanding of the issues being studied.
3. A detailed specification of the prerequisites that students must master before attempting to achieve each new outcome.
4. Plans for several different teaching strategies that can be used to help students achieve the desired learning outcomes.
5. A variety of tests, assignments, homework problems, tutorial sessions, guided practice/laboratory sessions, etc provide both the teacher and the students with feedback on their progress towards the learning outcomes achieved.

6. Resources and teaching techniques to assist students who do not master the required outcomes as quickly as other students.

Because of its focus on student success, our outcomes based approach education places much more importance on individual learning than many other approaches to education. One of the key questions in our outcomes based program is “What are reasonable and attainable outcomes for *each* student?” Once that question has been answered, teachers consider how they keep records of individual students’ progress towards these outcomes. Record keeping becomes much more important than it might be in situations where testing is a necessary evil rather than an integral part of student learning. We involve students in this record keeping so that they are reminded continually of the goals towards which they are working, and of the need for them to accept some of the responsibility for achieving those goals.

To guarantee the outcome of the course, the teaching of each topic in the course contents are designed to meet aforementioned criteria (a-m) and evaluated by a set of assessment tools. Notice the keywords as follows: “*define, repeat, remember, describe, explain, discuss, illustrate, interpret, analysis, design, derive, apply, compare, solve, calculate, perform, produce, justify, and evaluate.*”

These keywords determine the time and effort that the instructor has to spend on each topic. It also indicates the level of complexity for the learning process. The student’s learning outcome is evaluated according to the keywords using the assessment tools. These outcome based course assessment and evaluation tools are a combination of the following:

1. Homework assignments,
2. Quizzes,
3. Exams,
4. Class Attendance,
5. Design Project and laboratory written reports,
6. Design Project, its Written Report and Oral Presentation,
7. Computer Simulation using C, C++, MATLAB, LABVIEW, ANSYS, etc
8. Prototype development, if any,
9. Laboratory Testing / Project teamwork,
10. Course assessment (by students),
11. Instructor’s teaching performance evaluation (by students).

Program Outcomes (POs):

- a. An ability to apply knowledge of Mathematics, Science, and Engineering to solve complex engineering problems of Electronics and Communication Engineering systems.
- b. An ability to model, simulate and design Electronics and Communication Engineering systems, conduct experiments, as well as analyze and interpret data and prepare a report with conclusions.
- c. An ability to design an Electronics and Communication Engineering system, component, or process to meet desired needs within the realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability.
- d. An ability to function on multidisciplinary teams involving interpersonal skills.
- e. An ability to identify, formulate and solve engineering problems of multidisciplinary nature.
- f. An understanding of professional and ethical responsibilities involved in the practice of Electronics and Communication Engineering profession.
- g. An ability to communicate effectively with a range of audience on complex engineering problems of multidisciplinary nature both in oral and written form.
- h. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and societal context.
- i. A recognition of the need for, and an ability to engage in life-long learning and acquire the capability for the same.
- j. A knowledge of contemporary issues involved in the practice of Electronics and Communication Engineering profession
- k. An ability to use the techniques, skills and modern engineering tools necessary for engineering practice.
- l. An ability to use modern Electronic Design Automation (EDA) tools, software and electronic equipment to analyze, synthesize and evaluate Electronics and Communication Engineering systems for multidisciplinary tasks.
- m. Apply engineering and project management principles to one's own work and also to manage projects of multidisciplinary nature.

To guarantee the outcome of the course, the teaching of each topic in the course contents is designed to meet the aforementioned criteria (a-m) and evaluated by a set of assessment tools selected from the above (11) tools. Table below shows the mapping of the sample "**Switching**

Theory and Logic Design " course topics to criteria (a-m) and its corresponding assessment tools.

Course Topics	Mapping to Criteria (a – m) of Program Outcomes													
	a	b	c	d	e	f	g	h	i	j	k	l	m	
a. Explain different Number Systems, Codes and their Conversions. b. Explain Error Detecting & Error Correcting Codes c. Solve typical problems on the above.		√	√	√	√	√				√	√	√	√	√
Represent the given Boolean / Switching functions in various forms, prove Boolean Theorems, and minimize Boolean functions using these Theorems. Realize Switching functions using basic logic gates/universal gates.	√	√	√	√	√				√	√	√	√	√	
a. Minimize the given Switching functions in SoP and PoS forms using K-Map. b. Given a switching a function, generate the set of Prime Implicants using Tabular Method and minimize the function.	√	√	√	√	√				√	√	√	√	√	
Design the different types of combinational logic circuits.	√	√	√	√	√				√	√	√	√	√	
Design combinational logic circuits using different types of PLDs, namely, PROM, PLA and PAL.	√	√	√	√	√				√	√	√	√	√	
Design different types of synchronous sequential logic circuits.	√	√	√	√	√				√	√	√	√	√	
Design fundamental mode and pulse mode asynchronous sequential machines.	√	√	√	√	√				√	√	√	√	√	

Design digital systems using ASM Charts.	√	√			√		√		√	√	√	√	√
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Over the past three years, students' design project performance has been evaluated based on written reports and oral presentations. The key elements that the student had to demonstrate in their design project include

- a. Were the objectives and purpose clearly stated?
 - b. Was the problem well defined?
 - c. Was the project properly justified (Why?) (Scientific, economic, value?)
 - d. Was the design, analysis and modelling understood?
 - e. The approach taken was reached as part of a selection process?
 - f. Are the results technically and economically feasible?
 - g. Effective conclusions / recommendations?
 - h. Quality of the work or design.
 - i. Was the content was well organized?
 - ii. Were there appropriate uses of graphs, charts, board, audio-video.
 - iii. Was the message clearly delivered?
 - iv. Was Teamwork evident in the presentation?
- Faculty start by assessing the students' prerequisite knowledge and skills; if students do not understand essential prior knowledge or if they do not have the skills on which one wants to build; faculty provide instruction on the prerequisites.
 - Next, faculty prepares the students by explaining the outcomes that they are to be achieved (what they will be able to do when they have completed the unit satisfactorily). To be meaningful, each outcome is placed within an appropriate context and it should be related to one or more of the Key Competencies.
 - The faculty provides whatever forms of whole class instruction or individual/group work they consider will have the best chance of enabling all the students to achieve mastery of the unit.
 - Next, faculty organizes guided practice for the students so that they can be evaluated informally and provided with feedback to enhance their learning. The emphasis here is on *successful* guided practice through careful selection of examples and problems.
 - When most students seem to be ready to demonstrate mastery, assess their learning, or have the students assess their own learning through an appropriate form of self-assessment or

peer assessment. This assessment should take into account the context in which outcomes should be demonstrated.

- Students who have achieved mastery work on enrichment activities while those who have not achieved mastery receive additional instruction and practice.
- All students then take a summative test. Those who do not demonstrate mastery on this test receive an “incomplete” grade that they are required to convert to a mastery level through additional effort.

To be useful in an OBE system, assessment should conform to the following principles:

Our assessment procedures have been found to be

1. Valid and useful - they facilitated faculty to assess what they intend the assessment procedures to assess.
2. Reliable - they gave consistent results.
3. Fair and just - they were not influenced by any irrelevant factors such as the learner’s cultural background.
4. Able to reflect the knowledge and skills that are most important for students to learn.
5. Able to tell teachers and individual students something that they do not already know. That is, they have stretched students to the limits of their understanding and ability to apply their knowledge.
6. Both comprehensive and explicit.
7. Able to support every student’s opportunity to learn things that are important; and,
8. Able to allow individuality to be demonstrated because learners are individuals.

Our observation has been that

- ✓ Outcomes based program made teaching purposeful and systematic, rather than haphazard, while still allowing students to discover, to follow their interests, to take responsibility for their own learning, and to develop both academically, personally and professionally.
- ✓ It enabled our teachers to provide students with *appropriate* and *purposeful* learning experiences and opportunities so that they can develop originality, self-motivation and independence at the same time as they acquire useful knowledge and skills.

Best Practices II

1. Title of the Practice:

Centre for Academic and Career Guidance-Apply, compare, perform and produce.

2. Goal: The main goal of the center is to make the students discover their inner potential and strive to attain success in their chosen field. The center helps the students in identifying their

talents, interests and values in making right career choices. It lends its full support to students in academic planning and exploring future professional and placement opportunities available as per the changing global economy.

3. The Context: The College has decided to implement this center keeping in mind the changing market situation, volatile industry growth and demands, and availability of more number of opportunities to students but lack of proper understanding about the opportunities among the student community. With this humble thought the college has formed a center with the head of the institution as the chairman. In the process of functioning of the center it is observed that it is practically difficult in developing a common competence framework. The center demands a diverse workforce operating through both developed and assorted networks at all levels. The career guidance has to be widely available to a large group of students. Sometimes it is little difficult to accomplish the needs of the students at an optimum level.

4. The Practice

The center actually starts working making the students remember Socrates and his valid statement 'Know thyself'. The students are made to understand about themselves thoroughly. To achieve this, few questions that test their skills, aptitude, interests and goals are prepared and they are expected to answer the same after a thorough introspection. This can be considered as the first stage of the practice. With the attained clarity by answering the questions, the students are ready to brainstorm on various career options available. This is the second stage, which can be called as planning stage. Finally an interactive session is conducted with the students based on their goals and their strengths. This kind of planning to make the students realize their potential and inner talent is definitely a unique practice to be implemented in higher education. The practice emphasizes and believes that 21st century illiterate is not a person who do not know how to read or write, but a person who cannot *learn, unlearn and relearn*. The center strives to bring in all the three phases among the students.

5. Evidence of Success: It has been observed that more number of students are showing interest in pursuing higher studies in less known careers as well. The Alumni survey report clearly talks about the volunteering nature of the students of Geethanjali. The Alumni is ready to talk to their juniors on various career choices available. This is made possible with the efforts of the active center in the college.

6. Problems encountered and Resources Required:

Major constraints or rather challenges in developing the center is less motivation and interest in this direction among the middle cadre or young faculty joining teaching profession. The students find it difficult to prioritize their challenges, even after the guidance, because of family

or societal constraints. Limited number of faculty with an orientation towards career guidance, and less number of trained in-house faculties. As a result, guest lectures on the importance of ethical behavior and proper code of conduct is provided to students at regular intervals by experts. This has turned to be a costly affair to colleges, especially to self-financed colleges. To be an active member of the center, people involved should constantly update themselves in all walks of life. Though the questions framed to understand their inner potential apparently look simple, yet it is difficult for them to answer. This first stage demands a lot of attention by the senior and experienced faculty involved in the centre. The first stage requires a lot of clarity and positive thought process and passion to perform even among the faculty involved.

7. Notes (Optional)

As a part of the Career Guidance Center, the college has established a nodal center in collaboration with R.K.Mutt, Domalguda, Hyderabad, with an aim to inculcate self-confidence and make them realize the need for self monitoring. The basic premise of the center is to 'educate, build and reform'.

It is the conviction of the college that students who have been closely monitored and mentored have always performed far better than others who were not monitored didn't undergo mentoring. With this strong belief in mind, the college has established a "Center for Academic and Career Guidance (CACG)", with the Principal as its Chairman, that facilitates academic and career excellence of every student and to help discover his/her full potential and strive to attain success in his/her chosen field.

Activities of the Center are as follows:

Academic Guidance

Academic Guidance is provided to the students with the following objectives:

1. It is our endeavor to further extend the existing standards of discipline, attendance, and academic performance among students through continuous monitoring.
2. We strive to consistently and progressively effect improvement of each student in his/her overall academic performance by identifying students falling below desired standards and initiate remedial measures.

We fervently believe that monitoring student learning is an essential component of high-quality education. Therefore, the centre:

- ✓ Provides professional and confidential assistance in a supportive atmosphere.
- ✓ Offers advice on an individual basis on academics and allied issues.

- ✓ Provides counseling to students who experience academic setback, falling short of attendance and violating/deviating from general norms of code of conduct of the college.

The Centre aims at

- Reviewing student performance in the classroom through observation by the faculty who in turn inform the mentor, analysing the performance of the student in the tests, examinations, tutorial sessions, etc. The mentor would then suggest student to make required adjustments in his study habits and if need he arranges remedial instruction.
- Providing quality, professionally delivered counseling services to students through external professional mentors/counselors.
- Helps resolve academic difficulties of students by conducting periodic reviews and identifying gaps in their understanding and knowledge and provides a range of supportive activities and services aimed at enhancing the learning experience of the students.

Activities

The activities of counselling centre can be broadly classified into two heads.

1. Academic
2. Attendance & Discipline

Academic

1. An information gathered questionnaire is given to all students and information is collected and analyzed. Subsequently academic counseling is conducted, which is done at least twice in a semester, once at least five to six weeks before the first mid-exam with a follow up before the exam and the second at least five to six weeks before the second mid-exams with another follow up.
2. Students whose performance is found poor are identified and counseled to know the reasons for their poor performance and are advised appropriately. Remedial classes are arranged to help such students to improve their performance. These students are monitored closely and when required are counseled more frequently until they improve their performance.
3. Academic performance of students exposed to remedial classes is reviewed and necessary action is taken accordingly.
4. Performance of students who are unable to earn required credits/performance has to be intimated to their parents time to time.

Attendance

Centre ensures that:

1. Attendance is of the Day of the student is sent as SMS to his/her parents in the evening. Further, parents are given user ID and password to login to our attendance portal and can check his/her ward's attendance
2. Attendance of students is compiled once in a fortnight, their signature is obtained on same against their name and displayed on the notice board.
3. The students falling short of required attendance are informed about the same after such compilation and students are to be informed about how attendance is related to do well in performance in all assessments namely, tests, tutorials, assignments, exams and also in their career subsequently.
4. An undertaking is taken from students falling short of attendance.
5. Parents of such students are to be intimated as and when required and when they visit the campus to meet the mentor their ward, their signature is also obtained.

Career Guidance

- a. Offers career guidance programs and provides assistance and resources to support students in making real life connections to academic learning.
- b. Enable students to gain the skills, ability and confidence to transit successfully to further studies/work/self-employment or any other activity in which he/she lands deliberately or unwittingly.
- c. Equip students with tools needed to answer the “Life Long Learning” questions.
 - Who Am I?
 - What Am I Doing?
 - Why Am I Here?
 - Where Am I Going?
 - How do I Get There?
- d. Encourage students to open their mind to the numerous opportunities awaiting them.
- e. Facilitates students to explore their interest and talents and to take a realistic look into the world that awaits them.
- f. Provide services which expose students to infinite possibilities available in their future; to equip them with the tools they need to plan for future endeavors and to provide continued support and encouragement that they need to be successful in professional career as well as in personal life.
- g. Enable students to evaluate various career options and embark on their career path to meet their interests by showing them how to assess their interests and talents.

h. Help find answers to the following questions which pester students:

- ✓ What am I going to do when I leave college?
- ✓ Do I meet the entrance requirements of places of higher education?
- ✓ Can I afford to study further?
- ✓ Will I find a job in my chosen field and place?
- ✓ Should I take a gap/break after college?
- ✓ Are some places better to study than others?
- ✓ Is my degree internationally recognized?
- ✓ Will my job earn me the money to live the lifestyle I desire?

The college is highly confident that finding answers to these questions is easy if one has a good understanding of himself/herself and his/her choice of careers. It is possible to find a career path for each individual which draws on their strengths and builds on areas requiring improvement.

After facilitating students find answers to the above questions, the center

- a. Assists students realize their career priorities and goals;
 - i. provides students with skills needed to help manage their career throughout their professional life;
 - ii. helps students assess their aspirations and capabilities;
 - iii. advices and assists them about study opportunities, fellowships and academic programs in the country and abroad, career choice and decision-making etc.
- b. Helps the student, on an individual basis, formulate his/her own career plans as well as determine the nature of assistance needed from the office.
- c. Provides various services like:
 - Identifying strengths of students and guiding/counseling appropriately.
 - Appraisal
 - Follow-up
 - Referral (Self; faculty recommendation or formal faculty referral)
 - Relevant information

Discipline

1. Act of indiscipline includes non-compliance of dress code, improper behaviour in class and premises, teasing, smoking, consuming alcohol, malpractice in examinations, absconding from class etc.

2. Centre on the advice of CAC may constitute inter departmental disciplinary committee which would monitor continuously to maintain discipline in the college premises.
3. Any act of indiscipline found by the disciplinary committee which comprises faculty of various departments is brought to the notice of the centre immediately, which forwards it to the Principal, who in turn takes necessary action.

Operationalization of the activities

1. The centre takes steps to educate students to impress upon them the importance of maintaining discipline while in college and outside college so that they will actively and willingly co-operate with the college authorities in maintaining highest standards of discipline.
2. Heads of various departments are advised to nominate a few of their faculty members to liaise with the centre on behalf of their department with regard to activities prescribed.
3. The centre conducts periodical meetings with liaison officers to monitor smooth and effective functioning of the centre.
4. The centre designs required formats and circulate them to all HoDs to be submitted periodically with required data for a free flow of information from each department to the centre which can be consolidated to put up to the Principal.
5. The mentoring system of the college has been working exceptionally well.

