

# Book Review

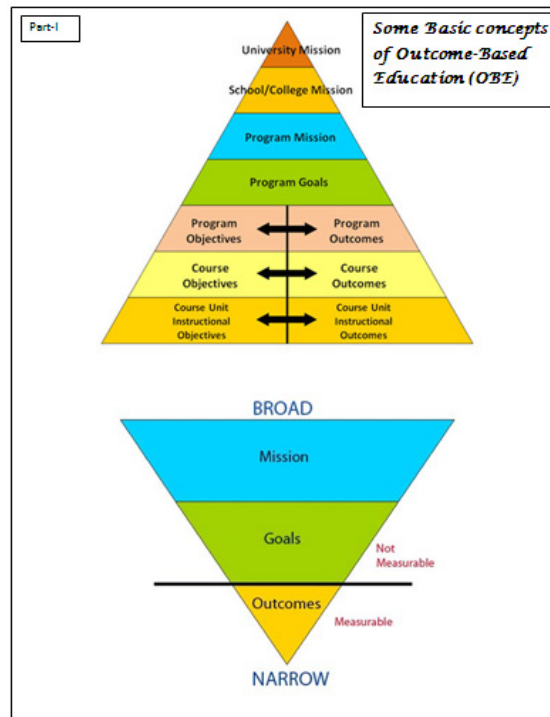
## E-Book on Outcome Based Education (OBE)



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Part-II; A Case Study: MMU

**Focus and Benefits of OBE**

**OBE addresses the following key questions:**

- What do we want the students to have or be able to do?
- How can we best help students achieve it?
- How will we know whether they students have achieved it?
- How do we close the loop for further improvement (Continuous Quality Improvement (CQI))?

**Benefits of OBE:**

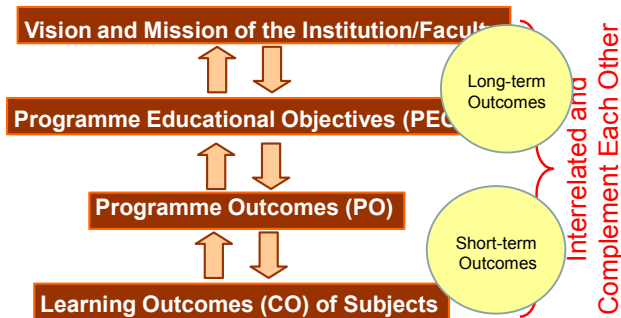
1. **More directed & coherent curriculum.**
2. **Graduates will be more “relevant” to industry & other stakeholders (more well rounded graduates)**
3. **Continuous Quality Improvement (CQI) is in place.**

**Expectations on Students under OBE – the Outcomes**

- Students are expected to be able to do more challenging tasks other than memorize and reproduce what was taught.
- Students should be able to: write project proposals, complete projects, analyze case studies, give case presentations, show their abilities to think, question, research, and make decisions based on the findings.
- Be more creative, able to analyze and synthesize information.
- Able to plan and organize tasks, able to work in a team as a community or in entrepreneurial service teams to propose solutions to problems and market their solutions.

**Outcomes in OBE**

**A Model Hierarchy of Outcomes**



**Vision and Mission of MMU**

**Vision of the University**

To be a premier university that propagates the generation and dissemination of knowledge in cutting edge technologies

**Mission of the University**

- 1.To deliver quality academic programmes based on state-of-the-art R&D.
- 2.To attract and nurture quality minds who will contribute towards the global knowledge economy
- 3.To inculcate a strong research culture within a dynamic, efficient and effective team of academic and support staff
- 4.To be financially self-sustaining via education and the commercialisation of R&D products and services.

**Vision and Mission of FOE**

**Vision of the Faculty**

To be a leading engineering faculty for creation, preservation and dissemination of knowledge, training of knowledge workers for nation building, and providing continuous technical support for the ICT industry in Malaysia.

**Mission of the Faculty**

- 1.To produce multi-skilled graduates who are able to spearhead nation-building in the Information Age.
- 2.To provide opportunities and resources for academic and researchers to carry out the state-of-the-art research and development work.
- 3.To support the growth of nationwide ICT industry through provision of continuous professional development of knowledge.

**Program Educational Objectives for B.Eng Electronics Majoring in Microwave & Comm.**

**Programme Educational Objectives (PEO)** are **long term goals (5 years or more after graduation)** describing expected achievements of graduates in their career.

**PEO of B.Eng. (Hons) Electronics Majoring in Microwave and Communications**

- To develop highly competent engineers specialising in the area of microwave and communications technologies in support of the related industry.
- To produce innovative technical leaders that are able to contribute towards the advancement of microwave and communications technologies.

## PEOs and Vision and Mission of MMU and FOE

### Example of how PEOs are linked to the Vision and Mission

Vision of the Faculty	Mission of the Faculty	Programme Educational Objectives (PEOs)
To be a leading engineering faculty for creation, preservation and dissemination of knowledge, training of knowledge workers for nation building, and providing continuous technical support for the ICT industry in Malaysia	<ol style="list-style-type: none"> <li>To produce multi-skilled graduates who are able to spearhead nation- building in the Information Age</li> <li>To provide opportunities and resources for academic and researchers to carry out the state-of-the-art research and development work</li> <li>To support the growth of nationwide ICT industry through provision of continuous professional development of knowledge</li> </ol>	<ol style="list-style-type: none"> <li>To develop highly competent engineers specialising in the area of microwave and communications technologies in support of the related industry. -Related to M1,M2 &amp; M3</li> <li>To produce innovative technical leaders that are able to contribute towards the advancement of microwave and communications technologies. -Related to M1 &amp; M3</li> </ol>

## Outcome-Based Education

### Example of how POs are linked to the PEOs

Programme Educational Objectives (PEOs)	Description of how POs (Programme Outcomes) are linked to the PEOs
<ol style="list-style-type: none"> <li>To produce all-rounded engineers in the telecommunications technologies in support of the emerging ICT industry</li> <li>To develop capable technical leaders who are able to spearhead the advancement of telecommunications in the country.</li> </ol>	<ol style="list-style-type: none"> <li><b>Ability to acquire and apply fundamental principles of science and engineering.</b> -The graduates have firm fundamental knowledge and therefore can easily understand and adapt to any change in the technology -This will ensure that the graduates will be of high caliber equipped with the fundamental technical principles of science and engineering so that they can lead, facilitate and support the development of engineering practices in the industries in Malaysia -Related to PEO 1</li> <li><b>Capability to communicate effectively</b> -Communication and networking skills are enhanced through presentations, exchanging ideas and arguing with solid rational -To be a good leader, effective communication is a must -Related to PEOs 1 and 2</li> </ol>

## Program Outcomes for B.Eng Electronics Majoring in Microwave & Comm.

**Programme Outcomes (PO)** are short term outcomes (at the point of graduation) describing what students are expected to know and be able to perform.

POs of B.Eng. (Hons) Electronics Majoring in Microwave and Communications
<ol style="list-style-type: none"> <li>Ability to acquire and apply fundamental principles of science and engineering.</li> <li>Capability to communicate effectively.</li> <li>Acquisition of technical competence in specialized areas of engineering discipline.</li> <li>Ability to identify, formulate and model problems and find engineering solutions based on a systems approach.</li> <li>Ability to conduct investigation and research on engineering problems in a chosen field of study.</li> </ol>

## Outcome-Based Education

Programme Outcome	Descriptions
<b>Ability to acquire and apply fundamental principles of science and engineering</b>	<p><b>Example of how the course subjects contribute towards POs</b></p> <ul style="list-style-type: none"> <li>- Core subjects on Mathematics (Engineering Mathematics I to IV), Circuit Theory, Electronics (I to III), Computer &amp; Program Design, Field Theory, Digital Logic Design, Instrumentation &amp; Measurement Techniques, Introduction to Machines, Algorithm &amp; Data Structure, Microprocessor Systems &amp; Interfacing, Circuits and Signals, Electromagnetic Theory, Control Theory, Communication Networks, Electromagnetic Interference, Introduction to Power Systems.</li> <li>- Basic concepts and theories and their relation to actual engineering systems are applied and extended in Final Year Projects and Industrial Training.</li> <li>- Extensive laboratory experiments to provide in-depth practical knowledge and hands-on experience to students.</li> </ul>

## Program Outcomes for B.Eng Electronics Majoring in Microwave & Comm.

POs Cont...
<ol style="list-style-type: none"> <li>Understanding of the importance of sustainability and cost-effectiveness in design and development of engineering solutions.</li> <li>Understanding and commitment to professional and ethical responsibilities.</li> <li>Ability to work effectively as an individual, and as a member/leader in a team.</li> <li>Ability to be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurial skills.</li> <li>Awareness of the social, cultural, global and environmental responsibilities as an engineer.</li> <li>Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.</li> </ol>

## Outcome-Based Education

**Learning Outcomes (LO) of subjects** are statements of a learning achievement on completion of the subject.

LOs of EEN1036 Digital Logic Design:
<ol style="list-style-type: none"> <li>Describe the differences between analog and digital systems, and their respective advantages and disadvantages.</li> <li>Apply positional notations, number systems and computer codes in digital systems.</li> <li>Apply algebraic methods based on Boolean algebra and truth table to analyse logic circuits.</li> <li>Apply minimisation methods such as Karnaugh maps and Quine-McCluskey tabular method to simplify switching functions.</li> <li>Apply the concepts of sequential logic and memory devices in digital systems.</li> <li>Design modular combinational circuits using encoders, decoders, multiplexers and demultiplexers.</li> </ol>

## Outcome-Based Education

Course to Program Outcomes Matrix for Courses under the **Electronic Engineering Majoring in Microwave and Communications**

CODE	SUBJECT	CONTRIBUTION TO PROGRAMME OUTCOMES (PO)										
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11
ENGINEERING SUBJECTS												
EEM1016	Engineering Mathematics I	80	10	0	10	0	0	0	0	0	0	0
EEM1026	Engineering Mathematics II	80	10	0	10	0	0	0	0	0	0	0
EEM2036	Engineering Mathematics III	80	10	0	10	0	0	0	0	0	0	0
ECM2046	Engineering Mathematics IV	80	10	0	10	0	0	0	0	0	0	0
EEM3066	Random Processes and Queuing Theory	0	5	45	45	0	0	0	5	0	0	0
ECT1016	Circuit Theory	60	10	10	10	0	0	0	10	0	0	0
ECT1026	Field Theory	60	10	10	10	0	0	0	10	0	0	0
ECT2036	Circuits and Signals	80	10	10	10	0	10	0	10	0	0	0
EEEN1016	Electronics I	80	10	10	5	0	10	0	5	0	0	0
EEN1036	Digital Logic Design	80	10	10	15	0	5	0	10	0	0	0
EEN1046	Electronics III	80	10	10	10	0	10	0	10	0	0	0
HNZ3066	Communications Electronics	30	10	25	15	10	0	0	10	0	0	0
ECP1016	Computer and Program Design	10	10	10	20	0	20	0	10	0	0	20
ECP1026	Algorithm and Data Structure	40	5	15	10	10	10	5	0	0	0	5

## Outcome-Based Education

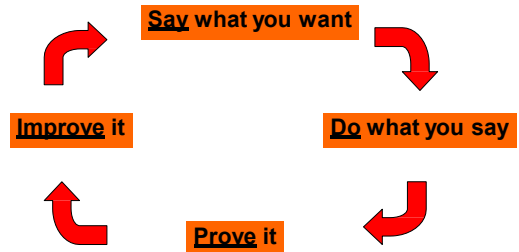
Example of Assessment Methods for Program Outcome 2:  
Capability to Communicate Effectively

Performance Criteria	Subjects	Assessment Methods
<ul style="list-style-type: none"> <li>Present and document ideas and experimental results properly documented in a specified format, and supported with evidence. The document must contain explanation with sufficient detail, with minimum grammatical and spelling errors.</li> </ul>	<ul style="list-style-type: none"> <li>All Subjects- Lab Experiments, FYP, ITP, Mini Projects</li> </ul>	<ul style="list-style-type: none"> <li>Coursework and exam</li> <li>presentation of Final Year Project and Industrial Tr</li> <li>Lab Reports</li> </ul>
<ul style="list-style-type: none"> <li>Use multimedia content in oral and visual communication</li> </ul>	<ul style="list-style-type: none"> <li>EPT4046 Final Year Project, EPT4066 Industrial Training</li> <li>Mini Project</li> <li>Other Seminars, and</li> <li>Meetings</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of Final Year Project, Industrial Traini</li> </ul>
<ul style="list-style-type: none"> <li>Respond to audience's questions correctly and confidently</li> </ul>	<ul style="list-style-type: none"> <li>EPT4046 Final Year Project, EPT4066 Industrial Training,</li> <li>EPT3016 Mini Project,</li> <li>other seminars and</li> <li>meetings</li> </ul>	<ul style="list-style-type: none"> <li>Presentation of Final Year Project, Industrial Traini</li> </ul>

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## Outcome-Based Education

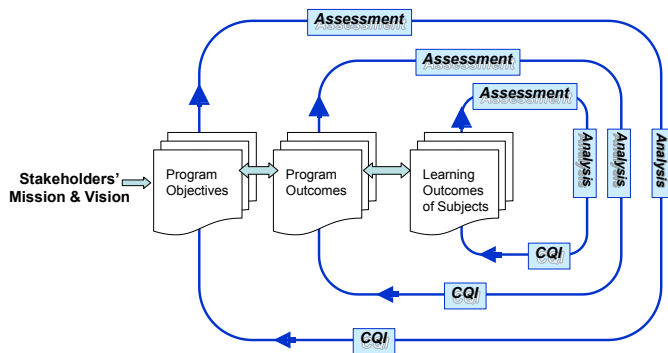
Continuous Quality Improvement (CQI)



## Roles of Lecturers

- Review PEOs, POs, course structures and syllabi.
- Teach the relevant engineering, maths, and other relevant subjects.
- Conduct relevant tutorials and laboratory practical sessions.
- Give appropriate guide on assignments and projects.
- Conduct empirical measurements of POs.
- Prepare the required documentation.
- Assure EAC and public on the standard of our graduates.
- Obtain and maintain accreditation from EAC through Continuous Quality Improvement (CQI).

## Outcome-Based Education



## Roles of Students

- Know the required Programme Outcomes and Programme Objectives (available at the FOE website).
- For each course, review the Learning Outcomes (available at the FOE website/uploaded in MMLS) at the beginning of each trimester. This gives you an idea of the knowledge and skills expected from a particular course.
- Be more proactive in the learning process to acquire the Learning Outcomes of subjects.
- Demonstrate through the assessment methods that the required skills and knowledge have been acquired.
- Attain the Programme Outcomes and Programme Objectives as a whole during the entire programme.
- Give constructive feedbacks on the programme/course/academic staff to obtain accreditation through active participation in Online Teaching Evaluation, Academic Advisory System, dialog sessions with Dean,

## Part-III: A Sample Collection of Vision and Mission Statements

Vision (*Where we want to be*) and Mission (*What are we*) statements

The vision statement is concerned with what one can visualize after say 20-30 years, a long range planning, whereas. Mission statement is about short range planning mostly limited to the duration of a program. Mission statement needs to clearly bring out 3-5 measurable outcomes (M1 – M5) that are further closely interwoven with Program Education Outcomes (PEO: may be 10-15) that dictate Course/Learning Outcomes.

### 1. AICTE

#### Vision

“To be a world class organization leading technological and socio-economic development of the Country by enhancing the global competitiveness of technical manpower and by ensuring high quality technical education to all sections of the society”.

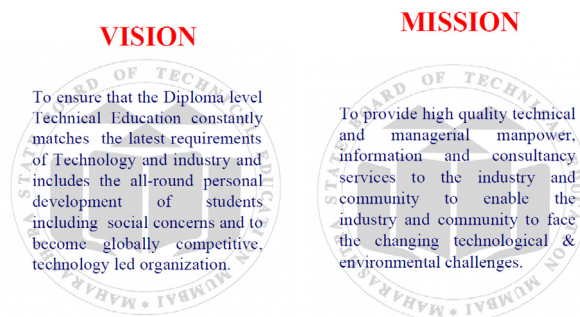
#### Mission

- A true facilitator and an objective regulator
- Transparent governance and her accountability approach towards the society.
- Planned and coordinated development of Technical Education in the Country by ensuring world-class standards of Institutions through accreditation.
- Facilitating world-class Technical Education through:
- Emphasis on developing high quality Institutions, academic excellence and innovative research and development programmes;
- Networking of Institutions for optimum resource utilization;
- Dissemination of knowledge;
- Technology forecasting and global manpower planning;
- Promoting industry-Institution interaction for developing new products, services, and patents;
- Inculcating entrepreneurship;
- Encouraging indigenous technology;
- Focusing on non-formal education;
- Providing affordable education to all.
- Making Indian Technical Education globally acceptable.
- To be a forward-looking organization that has an efficient, flexible and empowered manpower, sensitive to stakeholders' expectations.

### 2. MSBTE: VISION

To ensure that the Diploma level Technical Education constantly matches the latest requirements of Technology and industry

and includes the all-round personal development of students including social concerns and to become globally competitive, technology led organization.



#### MSBTE: MISSION

To provide high quality technical and managerial manpower, information and consultancy services to the industry and community to enable the industry and community to face the challenging technological & environmental changes.

### 3. Delhi Top Pvt. Engineering College

#### Vision

To develop centre of excellence for value based engineering education and research comparable with the best in the world through state-of-the-art technology, continuous learning and strategic partnership with the industry.

#### Mission

To provide quality technical human capital to the industry and society by establishing center of excellence of engineering education research.

To provide a superior, student centered learning environment which emphasizes close faculty student interaction and experiential education in order to prepare graduates who excel in their chosen profession, are qualified to pursue advanced degrees and possess the technical knowledge, critical thinking skills, creativity and ethical values which are needed for leadership in developing and applying technology for the betterment of society and sustaining the world environment.

### 4. BAMU Aurangabad

#### Vision-Mission

**Vision:** Dr. Babasaheb Ambedkar Marathwada University, Aurangabad is committed to create opportunities for quality higher education, intellectual reflection and spiritual enrichment and to raise moral and ethical standards. In his golden

jubilee year, the University has instituted Gautam Buddha Study Center to encourage and promote study and research on Gautam Buddha's philosophy and its social relevance in the 21st century.

**Mission:** Our University is committed to create an intellectual environment in a spirit of critical insights and rational enquiry. Therefore, the Gautam Buddha Study Center is dedicated to intensive study of Buddhist philosophy to instill in students a holistic development of Personality -Body, Mind and Soul to meet the challenges of 21st Century.

#### Objectives

- 1) To disseminate knowledge of Buddha's philosophy.
- 2) To promote consciousness rising of the finer sensibilities of life
- 3) To create scholars capable of critical analysis of thought in research.
- 4) To encourage ecumenism amongst the various school of Buddhist thoughts.
- 5) To undertake the interfaith dialogue to promote amity and harmony amongst the people.

## 5. Dr. BA University, Lonere



## 6. Harvard



#### Mission – Who we are

The SEAS HR office strives to develop and deliver innovative human resource programs and services designed to support the mission of SEAS and Harvard University. Our core services and competencies include recruitment and staffing, diversity, employee and labor relations, compensation, performance management, employee development, HR information management, and regulatory compliance. Our goal is to be the most effective, accountable, and engaged HR team possible.

#### Vision – Where we want to be

We seek to deliver superior customer service to the entire SEAS community with the goal of attracting, developing, motivating, and retaining a diverse workforce in a supportive work environment.

## 7. Malaysian University (MMU)

### Vision and Mission of MMU

#### Vision of the University

To be a premier university that propagates the generation and dissemination of knowledge in cutting edge technologies

#### Mission of the University

1. To deliver quality academic programmes based on state-of-the-art R&D.
2. To attract and nurture quality minds who will contribute towards the global knowledge economy
3. To inculcate a strong research culture within a dynamic, efficient and effective team of academic and support staff
4. To be financially self-sustaining via education and the commercialisation of R&D products and services.