Outcome Based Education (OBE) & Continuous Quality Improvement (CQI)
Overview

- Issues in Higher Education, Teaching & Learning
- Why Outcome-based Education?
- What is Washington Accord?
- Outcome-based Education
  - Implementation of OBE
  - Characteristics of OBE Curricular
  - Operation Models of OBE
  - Programme Objectives
  - Programme Outcomes
  - Learning Outcomes
- Assessment Issues and Tools
- Continual Quality Improvement
Issues In Higher Education

• Accountability towards students - fulfilling requirements of the curriculum
• Satisfying needs of industry - unemployed graduates
• Maintaining academic standards - unaccredited programmes
• Accountable to grant providing organizations - stakeholders
• Accreditation - outcome based education
Issues In Teaching And Learning SSTACoF

• Student intake – qualification, quantity
• Staff – Qualification, competency
• Teaching process – transparent, control
• Assessment – outcomes
• Courses – up to date, relevant
• Facilities – sufficient, up to date,
Why Outcome-based Education?

• To fulfill the requirements of EAC*, BEM*, Washington Accord
  - BEM registers graduates and professional engineers
  - Programmes attain standard comparable to global practice, hence accreditation required
  - EAC is the body delegated by BEM
  - requires elements of outcomes in engineering curriculum to ensure CQI culture in the spirit of OBE.

• It is a natural way of what higher level education should be based on

*EAC - Engineering Accreditation Council
*BEM - Board of Engineers Malaysia
Accreditation Objective

• ...graduates of accredited programme satisfy minimum requirement for registration with BEM / IEM
• ...ensures CQI is being practiced
What’s Washington Accord?

• an international accreditation agreement for professional engineering academic degrees,
• established in 1989, the signatories as of 2007 are Australia, Canada, the Republic of Ireland, Hong Kong, Japan, New Zealand, Singapore, South Africa, South Korea, Taiwan, the United Kingdom and the United States.

• recognizes that there is substantial equivalency of programs accredited by those signatories.
• graduates of accredited programs in any of the signatory countries are recognized by the other signatory countries as having met the academic requirements for entry to the practice of engineering.
What’s Washington Accord? (cont…)

- The following countries have provisional signatory status and may become member signatories in the future:
  - Germany
  - India
  - Malaysia
  - Russia
  - Sri Lanka
OBE addresses the following key questions:

• What do you want the students to have or able to do?
• How can you best help students achieve it?
• How will you know what they have achieved it?
• How do you close the loop
OBE addresses the following key questions: (cont...)

- Who are our stakeholders?
- What services do we provide?
- Do constituencies understand our objectives?
- What services, facilities and policies must be present?
- How do we measure our results?
- How do we use these results for CQI?
- Are we achieving our objectives and improving?
- Are our constituencies satisfied?
Outcome-based Education

Focuses on student learning by:

• Using learning outcome statements to make explicit what the student is expected to be able to know, understand or do;

• Providing learning activities which will help the student to reach these outcomes;

• Assessing the extent to which the student meets these outcomes through the use of explicit assessment criteria.
Outcome-based Education

Constituents requirements (Develop objectives)

Curriculum, Staff & Facilities → Teaching & Learning → Graduates with Outcomes

Constituents satisfaction (Achieving objectives)

Continual Quality Improvement
Implementation of OBE Program

- Effective Program Educational Objectives.
- Effective Program Outcomes.
- Practical Assessment Tools.
- Effective Assessment Planning.
- Robust Evaluation Planning.
- CQI procedures in place
Characteristics of OBE curricula

- It has program objectives, program outcomes, course outcomes and performance indicators.
- It is objective and outcome driven, where every stated objective and outcomes can be assessed and evaluated.
- It is centered around the needs of the students and the stakeholders.
Characteristics of OBE curricula (cont...)

- Every learning outcome is intentional and therefore the outcomes must be assessed using suitable performance indicators.
- **Program objectives** address the graduates attainment within 3-5 years after their graduation.
- **Program outcomes**, which consist of abilities to be attained by students before they graduate, are formulated based on the program objectives.
Characteristics of OBE curricula (cont...)

• Program outcomes address Knowledge (K), Skills (S) and Attitudes (A) to be attained by students.
• Teaching / Learning method may have to be integrated to include different delivery methods to complement the traditional Lecturing method.
Operation Models for OBE

Distribution of K, S, A elements throughout the 4 years
Vision
To be a premier university that propagates the generation and dissemination of knowledge in cutting edge technologies

Mission
• To deliver quality academic programmes based on state-of-the-art R&D.
• To attract and nurture quality minds who will contribute towards the global knowledge economy.
• To inculcate a strong research culture within a dynamic, efficient and effective team of academic and support staff.
• To be financially self-sustaining via education and the commercialisation of R&D products and services.
Vision
To be a competitive engineering faculty that innovates learning and research as well as supports the production of versatile graduates in facing the challenges of globalisation.

Mission
• To produce competent engineers who will drive and support the K-economy of the country
• To function as a leading faculty for R&D activities
• To serve as a catalyst for ideas/resources of ICT
Programme Objectives

• What the programme is in preparing graduates for their career and professional accomplishments (*published*)

• *Consistent with institution missions* (*evidence*)

• *Involvement of constituents / stakeholders* (*evidence*)
Programme Outcomes

• Expected to know and able to perform or attain by the time of graduation (skills, knowledge and behaviour/attitude)

• Outcomes (a) to (k)
Programme Outcomes

<table>
<thead>
<tr>
<th>a)</th>
<th>Ability to acquire and apply fundamental principles of science and engineering.</th>
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<tr>
<td>b)</td>
<td>Capability to communicate effectively.</td>
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<td>c)</td>
<td>Acquisition of technical competence in specialised areas of engineering discipline</td>
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<tr>
<td>d)</td>
<td>Ability to identify, formulate and model problems and find engineering solutions based on a system approach.</td>
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<td>e)</td>
<td>Ability to conduct research in chosen fields of engineering.</td>
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<td>f)</td>
<td>Understanding of the importance of sustainability and cost-effectiveness in design and development of engineering solutions.</td>
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<tr>
<td>g)</td>
<td>Understanding and commitment to professional and ethical responsibilities.</td>
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Program Outcomes (cont...)

<table>
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<tr>
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<th>Description</th>
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<td>h)</td>
<td>Ability to <strong>work effectively as an individual, and as a member/leader in a team.</strong></td>
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<td>i)</td>
<td>Ability to be a multi-skilled engineer with good technical knowledge, management, leadership and entrepreneurial skills.</td>
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<td>j)</td>
<td>Awareness of the social, cultural, global and environmental responsibilities as an engineer.</td>
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<tr>
<td>k)</td>
<td><strong>Capability and enthusiasm for self-improvement through continuous professional development and life-long learning.</strong></td>
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Learning Outcomes

- Outcomes that are expected from a certain subject and these are assessed and evaluated through various measurement tools.
Requirements from the students

- **Active role** - must come prepared for each class; contribute by teaching others, actively participating, taking risks, learning from instructor/classmates
- **Ethics** - respect, trust and openness
- **Committed to learning** - continual improvement
Assessment Tools

• Exit surveys, Exit interviews (P)
• Alumni surveys and interviews (P)
• Employer surveys and interviews (P)
• Job offers, starting salaries (relative to national benchmark) (P)
• Admission to graduate schools (P)
• Performance in group and internship assignments (P,C)
• Assignments, report and tests (P,C)

P: Program  C: Course
Assessment Tools (cont...)

- Student surveys, individual and focus group interviews (P,C)
- Peer-evaluations, self evaluations (P,C)
- Student portfolios (P,C)
- Behavioral observation (P,C)
- Written tests linked to learning objectives (C)
- Written project reports (C)
- Oral presentation, live or videotape (C)
- Research proposals, student-formulated problems (C)
- Classrooms assessment techniques (C)

P: Program    C: Course
Continual Quality Improvement

• Assessment and evaluation processes provide critical information to faculty (lecturers) and administrators on the effectiveness of the design, delivery, and direction of an educational program - CQI

• Improvements based on feedback from evaluations will close the system loop and the process will continue year after year.