Processes for academic programs' internal assessments

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Overview

- Definition
- Quality assurance unit roles
- Academic program internal assessment
- Conclusion

What is quality assurance?

- Systematic, explicit and documented process which:
  - Measures institution's performance against the institution's mission and educational goals
  - Integrates a systematic review
  - Results in continuous enhancement of the institution's quality

Quality assurance unit main roles

Attaining the university performance against its goals

Year-around continuous monitoring and sustaining program accreditation

Maintaining policies and procedures

Assessing academic programs

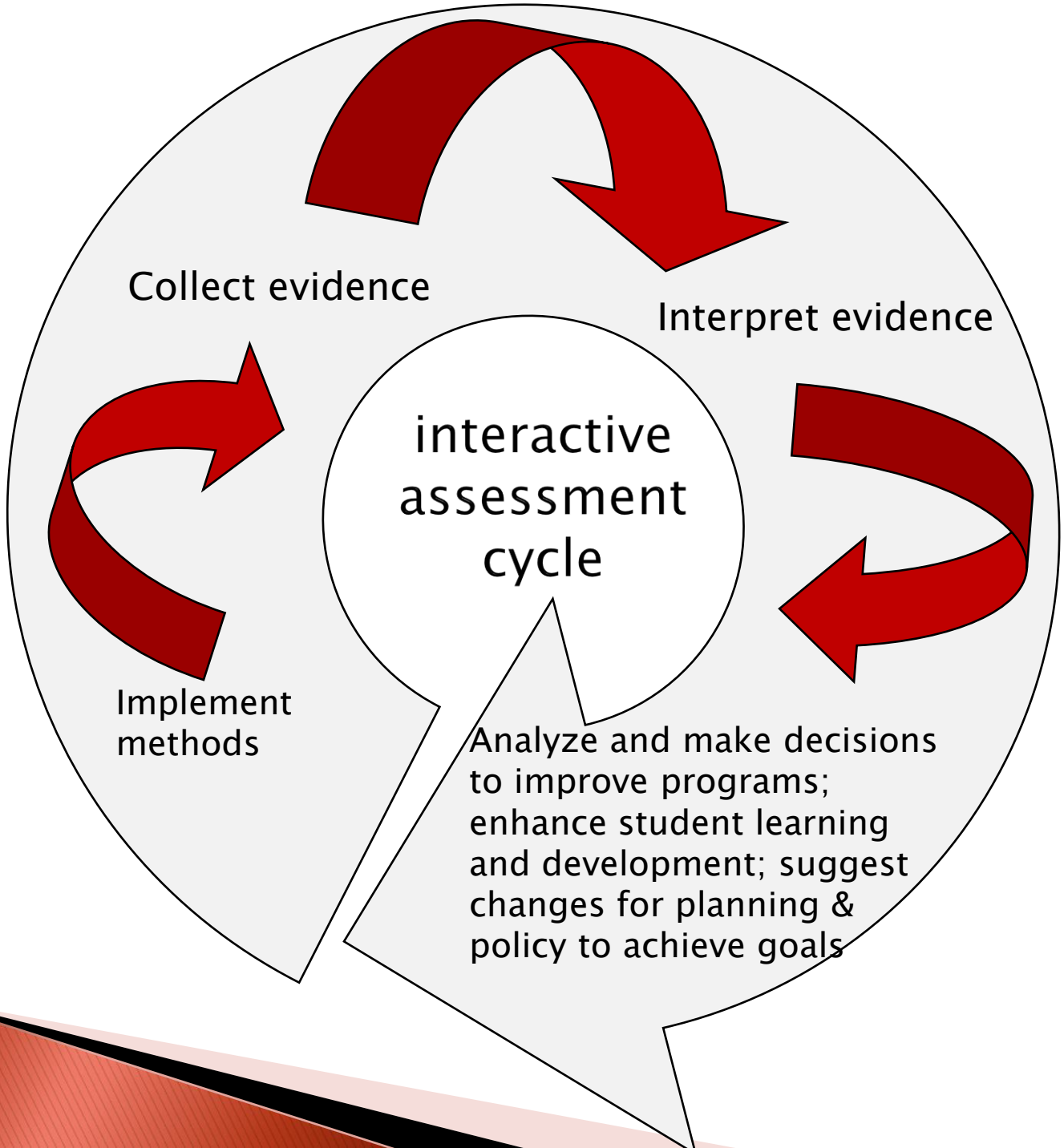
Nurturing faculty members' educational activities and workshops

The program effectiveness

- Based on a continuous cycle of making plans, carrying out plans, assessing to analyze and evaluate success, and deciding on changes to be made for improvement.

- This process complements program review by external sources (CAA).

- Each program at the University has developed their own system of program outcomes and course outcomes which are used as assessment tools for measuring the effectiveness of the program


Collect evidence
Interpret evidence
interactive assessment cycle
Implement methods
Analyze and make decisions to improve programs; enhance student learning and development; suggest changes for planning & policy to achieve goals

When do we begin program assessment?

Certificate of accreditation

- Teaching and learning strategies are proposed in the academic program as part of the initial accreditation
- Appropriate assessment strategies to meet the program ILOs are identified
- Appropriate assessment tools and matrixes to measure the ILOs are presented

Main elements of academic program – four year plan

S/N	Course Code	Course Title	Total Credits	Subject Group	Pre-requisite	Weekly Contact Hours			
						Theor	Pract.	Tutorial	Total
1	**ENGR 210**	Circuits analysis	3	Engineering	**PHY 111**	3	-		3
2	**ENGR 201**	Engineering mechanics	3	Engineering	**PHY 110, MTH 110**	3			5
3	**MTH 210**	Probability and statistical methods	3	Statistics	**MTH 110**	3	-		3
4	**IENG 200**	Introduction to industrial engineering	3	Industrial engineering	**CS 101, MTH 110 PHY 110**	3			3
5	**MTH 215**	Linear algebra & ordinary differential equations	3	Mathematics	**MTH 110**	3	-		3
6	**MASC 205**	Introduction to material science	3	Material Science	**CHM 105, MTH 110, PHY 110**	3			3
			18			**18**			**18**

Main elements of academic program – ILOs for Program

Upon completion of the Industrial Engineering program graduates will have the ability to:

a. Apply knowledge of mathematics, science, and engineering.
b. Analyze and interpret data in different contexts.
c. Design and conduct experiments in the classroom or in the field.
d. Model a system, component, or process to meet desired needs.
e. Identify, formulate, and solve engineering problems.
f. Recognize the professional and ethical responsibilities of industrial engineers.
g. Communicate ideas effectively.
h. Understand the impact of engineering solutions in a global and societal context.
i. Become aware of current best practices and contemporary issues in industrial engineering.
j. Apply the techniques, skills, and modern engineering tools necessary for engineering practice.
k. Participate in multi-disciplinary teams in professional settings.

Main elements of academic program – Curriculum Map Relating Individual Courses to Program Outcomes

Bachelor of Science in Industrial Engineering												
Course Details		**Program Outcomes**										
Course code & number	**Course Title**	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
ENG 102	English for academic purposes							X				
GED 203	Critical thinking techniques						X	X		X		
GED 301	Energy and the environment	X									X	
MTH 110	Calculus I	X	X			X		X			X	
MTH 210	Probability and statistical methods	X	X			X		X	X		X	
MASC 205	Introduction to material science	X	X		X	X	X	X				
IENG 498	Graduation project I	X	X	X	X	X	X	X	X	X	X	X
IENG 499	Graduation project II	X	X	X	X	X	X	X	X	X	X	X
Extra Curricular Activities												
	Field Trips								X	X		
	Academic visits, conferences and seminars	X	X			X	X	X	X	X		X

Main elements of academic program – Course Syllabus

College: College of Engineering
Program: B. Sc. Industrial Engineering
Course code & number: MTH 110
Course title: Calculus I
Pre requisite:
Co requisite:
Credits: 4
Course level: 1st year (1st semester)

Course description (4: 4: 0):

An introduction to the basic concepts and develop the understanding of limits, continuity, differentiability, derivatives, indefinite and definite integrals, differentiation and integration of transcendental functions and introduce their applications in engineering.

Course aims (sometimes included within the course description):

The main aims of the course are:

- To introduce the students to the language of calculus with its many topics
- To introduce the students to the different ways of presenting functions
- To familiarize the students with definite and indefinite integration to solve a variety of problems

Course outcomes:

Upon successful completion of this course, the student will be able to:

- Solve problems related to rate of change of variable.
- Determine maxima and minima.
- Solve simple optimization problems.

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Course Assessments

Methods of Assessment	Weighting %	Outline Details
Course work (Lab work, projects, assignments and quizzes) Unseen Midterm Examination Unseen Final Examination	40% 20% 40%	Before & After midterm 1.5 Hour 3 Hours

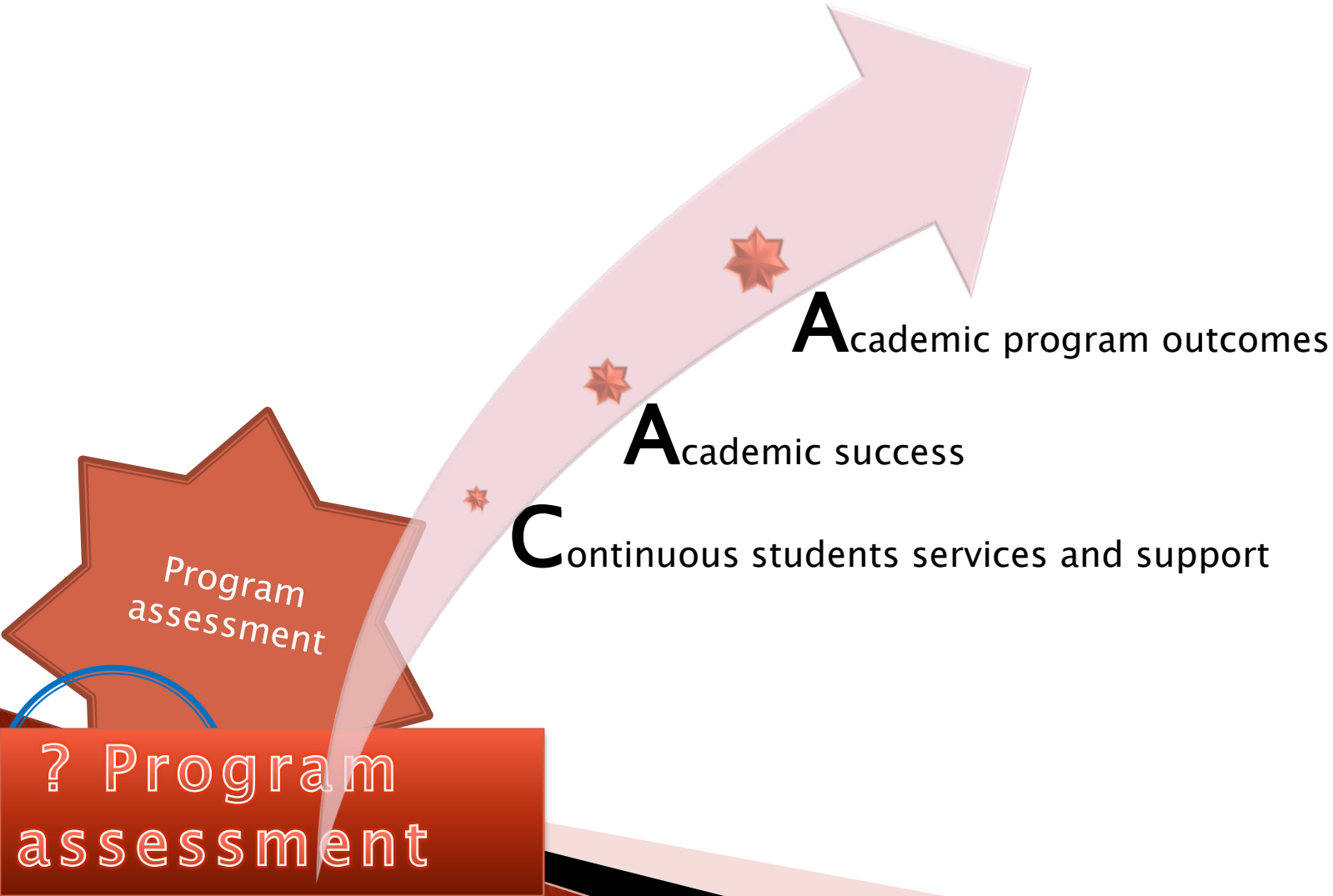
Course topics and contents (tentative):

Week #	**Topic**
1	Introduction and syllabus
2	Definition of the limit of a function
3	Theorems about limits
8	**Midterm exam**
9	The definite and indefinite integral
10	Applications of integrations
14	Differentiation and integration of inverse trigonometric functions, logarithmic functions
15	exponential functions, hyperbolic functions, and inverse hyperbolic functions
16	**Final exam**

Direct Assessment tool matrix

Assessment Tool	Program Outcomes										
	a	b	c	d	e	f	g	h	i	j	k
Exams, Quizzes	x	x			x		x				
Homework Assignment	x	x			x		x				
Laboratories	x	x	x	x	x		x			x	x
Group Projects	x	x	x	x	x	x	x	x	x	x	x
Oral Presentations							x				
Project training	x	x	x	x	x	x	x	x	x	x	x
Capstone	x	x	x	x	x	x	x	x	x	x	x

Academic program assessment focus

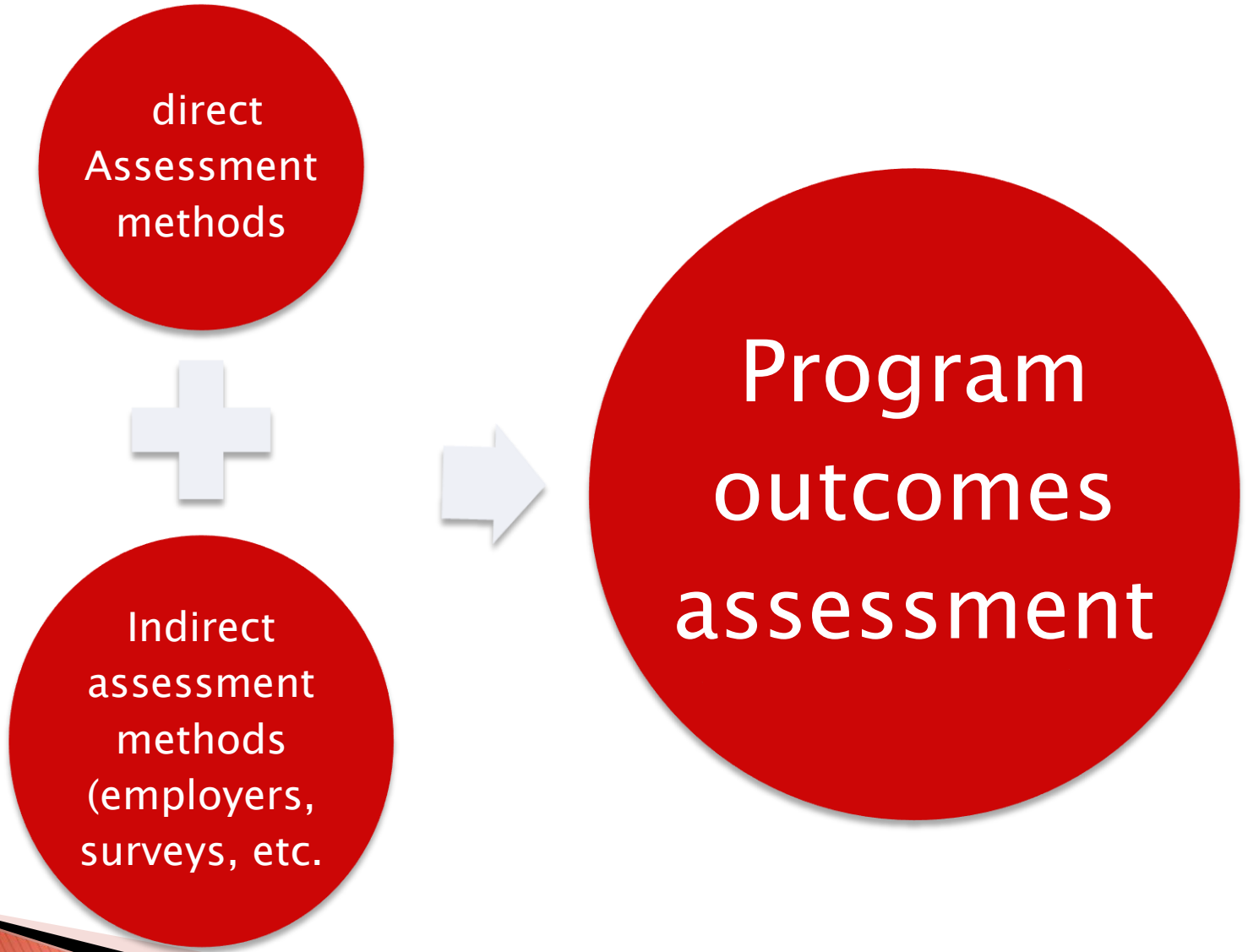


Academic program outcomes

Academic success

Continuous students services and support

Program outcomes assessment tools



Academic direct assessment

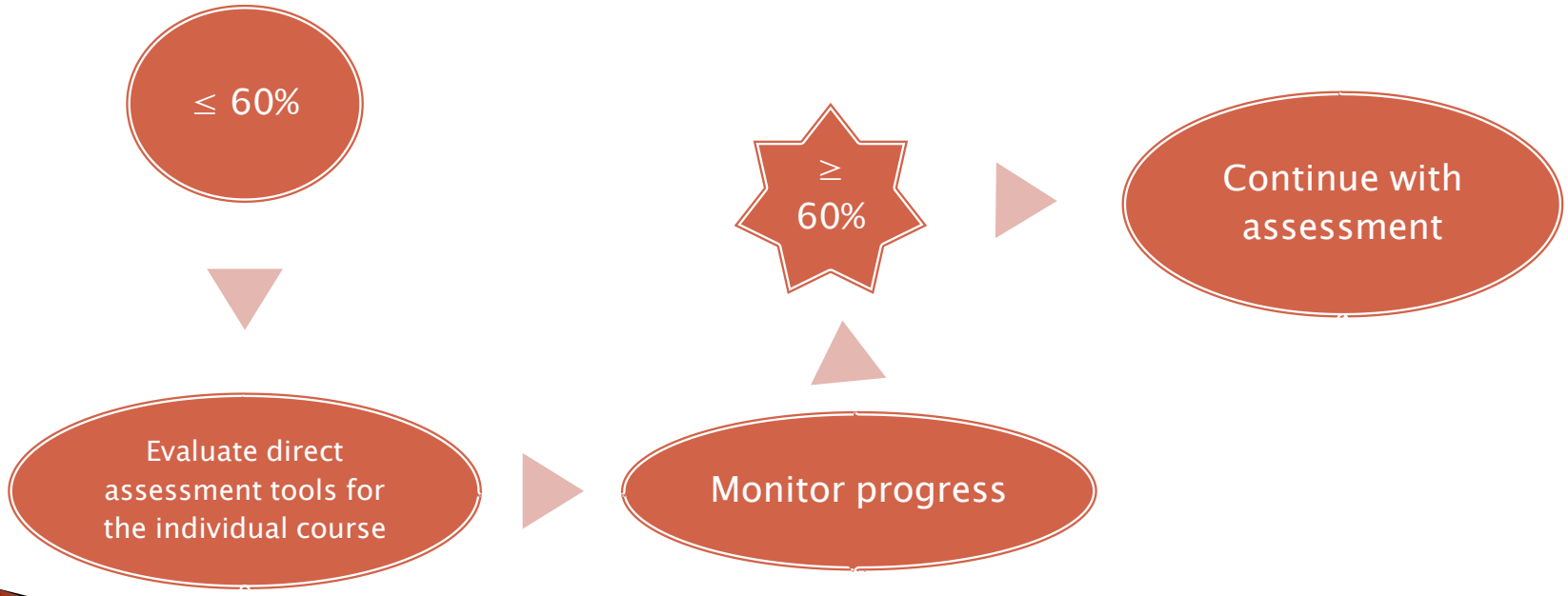
Tool	Frequency
Exams	Every semester
Capstone course	During the junior/senior year
Assignments	Every semester
Students portfolio	Every semester
Graduation project/internship	During senior year

Academic program indirect assessment

Tool	Frequency
Board of study meeting	Every semester
Student evaluation	Every semester
Students' training	Available annual after completing sophomore year
Faculty self assessment	Every semester
Course monitoring report	Every semester
Student surveys	Annual
Exit interviews	At the time of graduation
Employers surveys	Every 4 years
Alumni surveys	Every 4 years

Academic program assessment

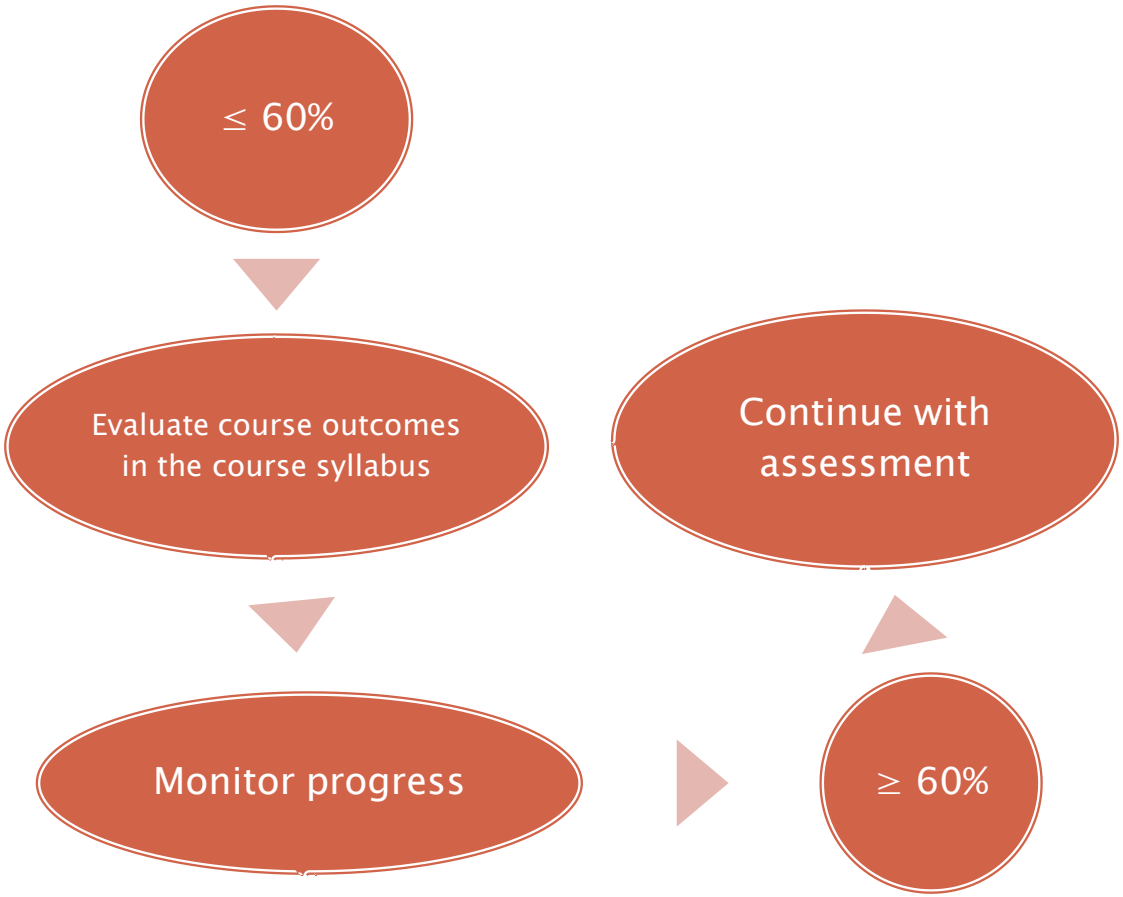
1. Analysis of course performance (≥ 60% is a pass) B. Sc. in …			
Course code & number	Course name	% students passed	Course outcomes achievements
PHY 102	Physics	60	YES



Academic program outcomes cont'd

2. Program outcomes average achievement B. Sc. in …					
Courses		Program outcomes (60% and above, PO is achieved)			
Course code & number	Course name	1	2	3	…
PHY 102	Physics	YES	YES		
. . .	. . .	. . .	. . .	. . .	
% outcomes achievement		90%	60%	45%	

Academic program assessment cont'd



Academic program assessment cont'd

3. Analysis of exit surveys (60% or above, PO is achieved) B. Sc. in …	
Program Outcome	Statistics analysis
PO 1	70 %
PO 2	60 %

Academic program assessment cont'd

4. Analysis of internship surveys (60% or above, PO is achieved) B. Sc. in …	
Program Outcome	Statistics analysis
PO 1	75%
PO 2	60 %

Academic program assessment cont'd

PO 1 overall achievement			
Assessment tool	Assessment tool weight	Score	Decision
Course performance	50% ?	90%	Yes
Exit survey	25% ?	70%	Yes
Internship survey	25% ?	75 %	Yes
Overall PO assessment		PO achieved	

Conclusion: Micro to macro assessment approach


Thank You