

31.08.2019



# Outcome Based Education

CO-PO-PSO Calculation

DEPARTMENT OF MECHANICAL ENGINEERING  
MARIAN ENGINEERING COLLEGE

# Outcome Based Education

- Outcome-based education (OBE) is an **educational theory** that bases each part of an educational system around goals (**OUTCOMES**)
- OBE means

## ***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**

# Role of FACULTY

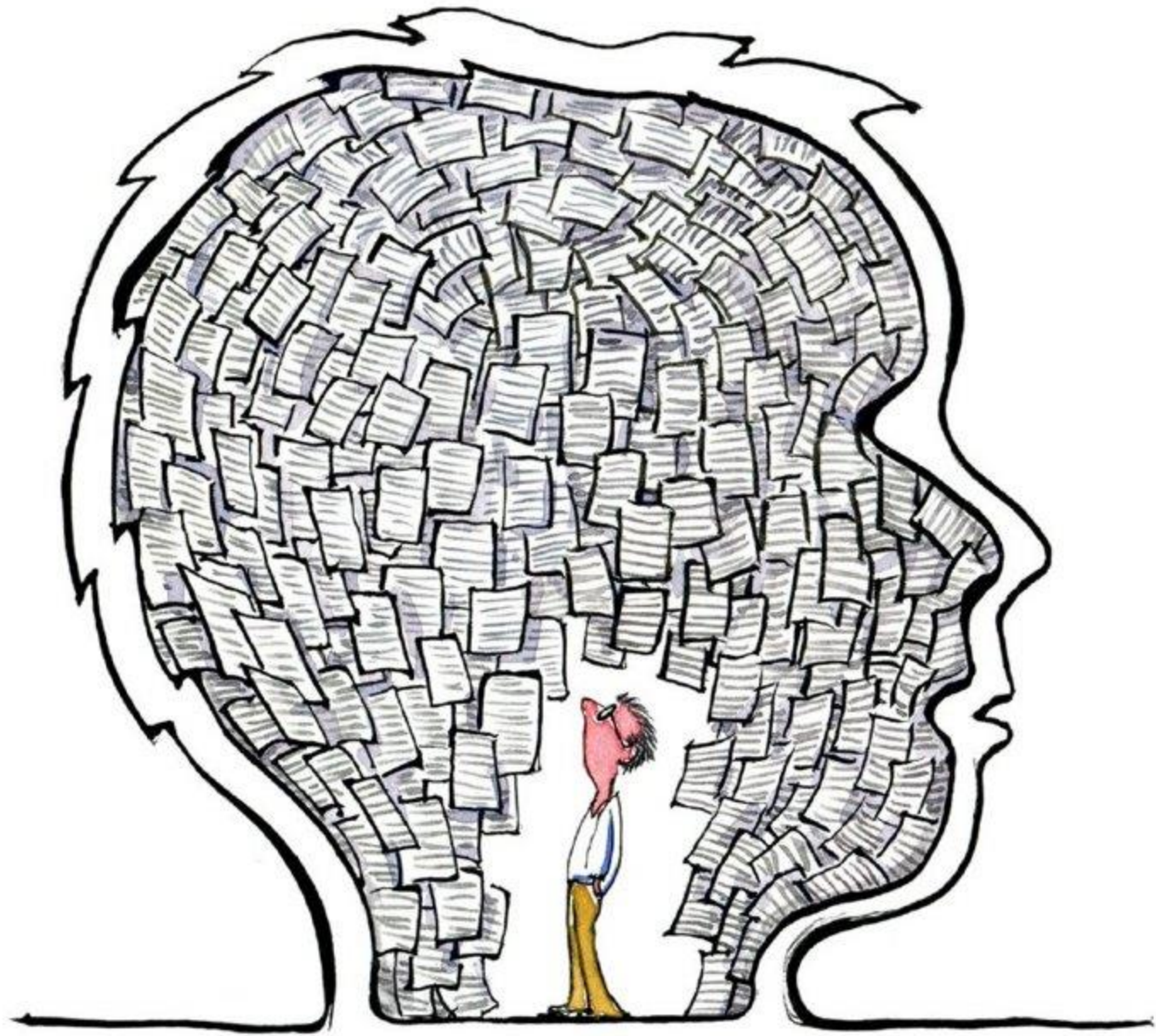
- Adapt him/herself into

*INSTRUCTOR,  
TRAINER,  
FACILITATOR, and  
MENTOR*

based on the outcomes targeted.



**OBE IS MORE OF  
A PHILOSOPHY  
THAN A SET OF  
PRACTICES**

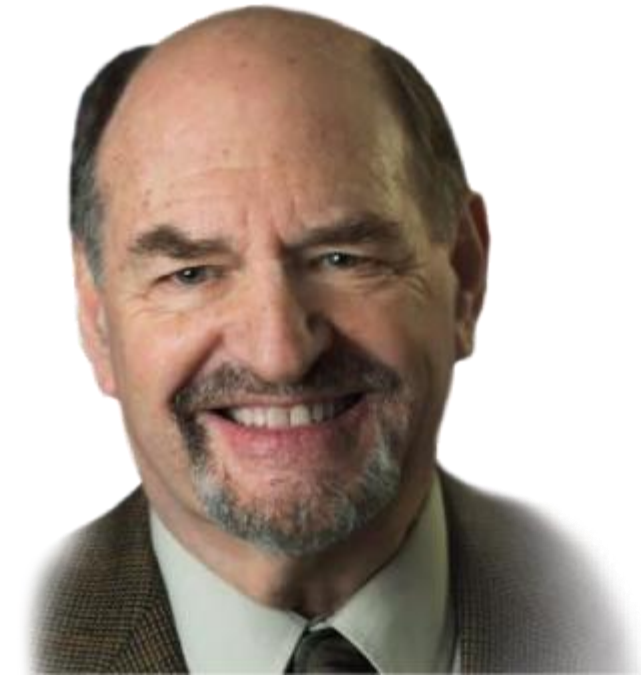


# FOUR PRINCIPLES IN OBE

- The most widely used one is the four principles suggested by Dr. William Spady in the year 1994.

Dr. William Spady is considered as the father of OBE.

- **CLARITY OF FOCUS**
- **DESIGNING DOWN**
- **HIGH EXPECTATIONS**
- **EXPANDED OPPORTUNITES**



- CLARITY OF FOCUS

- \*\* Focus on what want learners be able to do successfully

- \*\* Focus assessments on significant outcomes

- DESIGNING DOWN

- \*\* Trace back from desired end results

- \*\* Identify “*Learning Building Blocks*”

- HIGH EXPECTATIONS

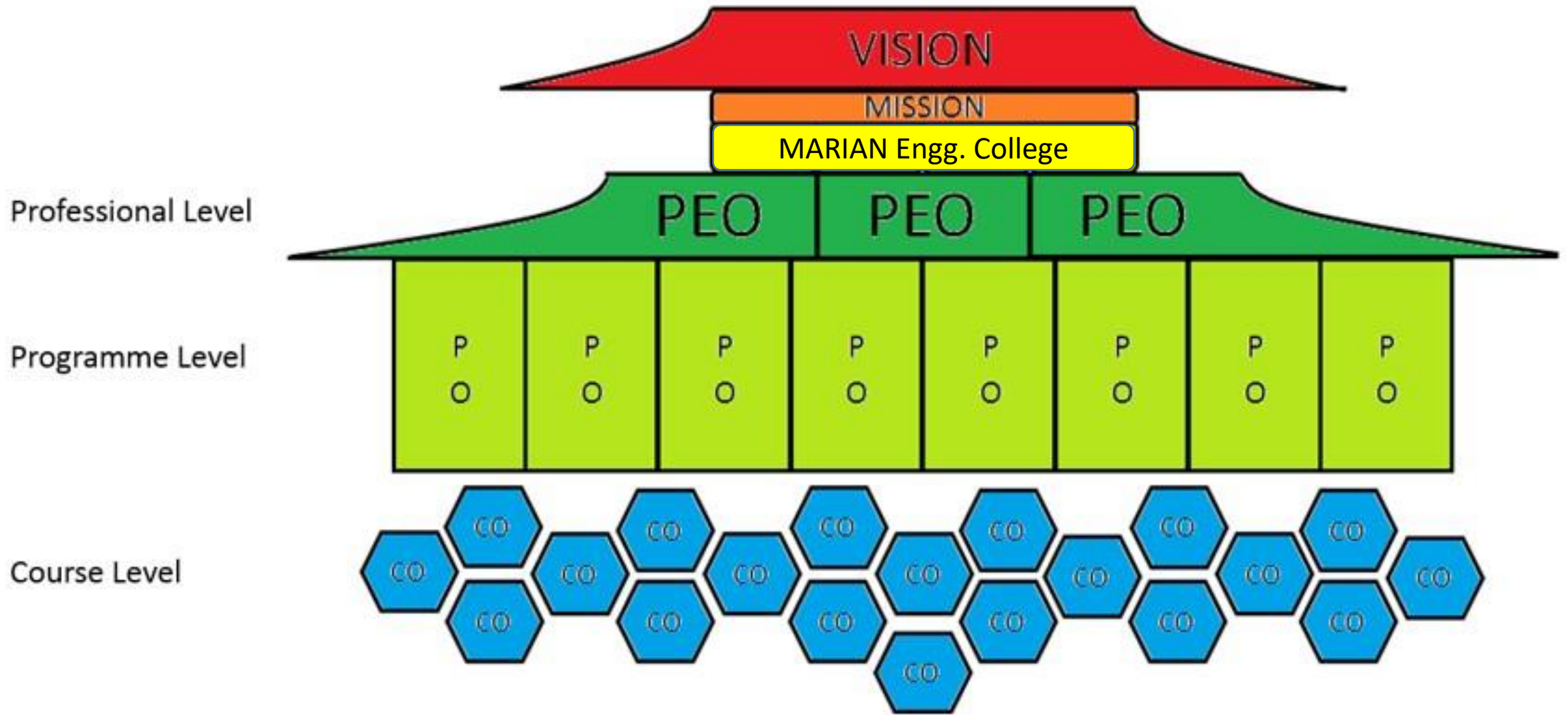
- \*\* Establish high, challenging performance standards

- \*\* Engage deeply with issues are learning

- EXPANDED OPPORTUNITES

- \*\* All students can be successful. *Its only that they may require different instructional strategies*

- \*\* Additional learning opportunities in order to do so



# PROGRAM OUTCOME

• **Program outcomes** describe what students are expected to know and be able to do by the time of graduation. These relate to the skills, knowledge and behaviors that students acquire as they progress through the **program**.

1. Engineering Knowledge
2. Problem Analysis
3. Design and Development of Solutions
4. Conduct Investigations on Complex Problems
5. Modern Tool Usage
6. The Engineer and Society



7. Environment and Sustainability
8. Ethics
9. Individual and Team Work
10. Communication
11. Project Management and Finance
12. Life-Long Learning

**THESE ARE THE 12 SKILLS AND ATTITUDES  
THE STUDENTS SHOULD POSSESS AT THE  
END OF A FOUR YEAR ENGINEERING  
PROGRAM IN  
INDIA**

# PROGRAM SPECIFIC OUTCOME

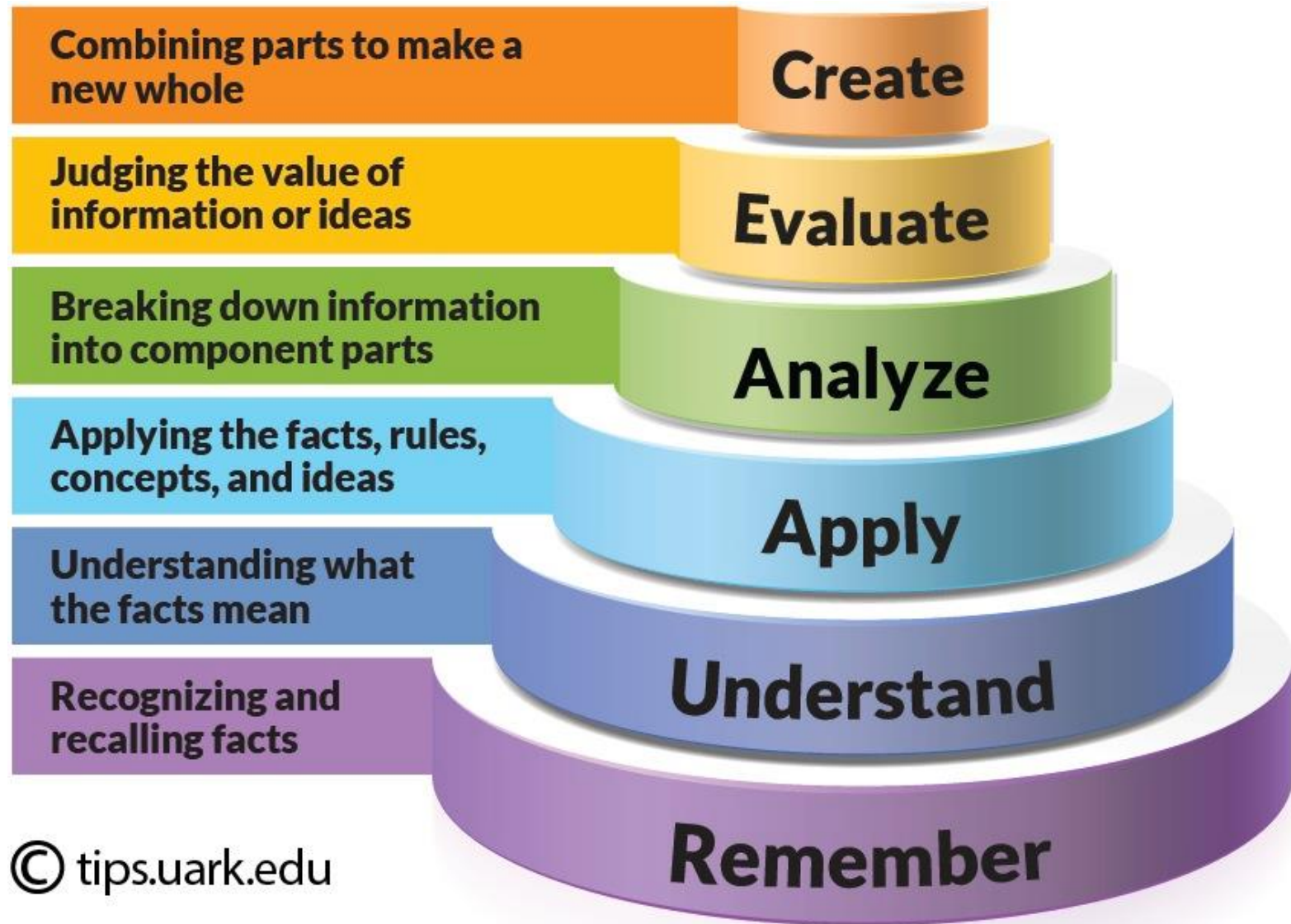
PSOs are statements that describe what the graduates of a specific engineering program should be able to do

The **Department of Mechanical Engineering** has defined three PSOs

- **Global portability:** *Adaptability of students among national & international repute*
- **Awareness of contemporary issues:** *Capability to identify & rectify new age problems*
- **Multidisciplinary skillset:** *Ability to perform across multiple engineering domains*

# BLOOM'S TAXONOMY

- *Developed to provide a common language for teachers to discuss and exchange learning and assessment methods.*
- *It is a hierarchical model used to classify educational learning objectives into levels of complexity and specificity.*

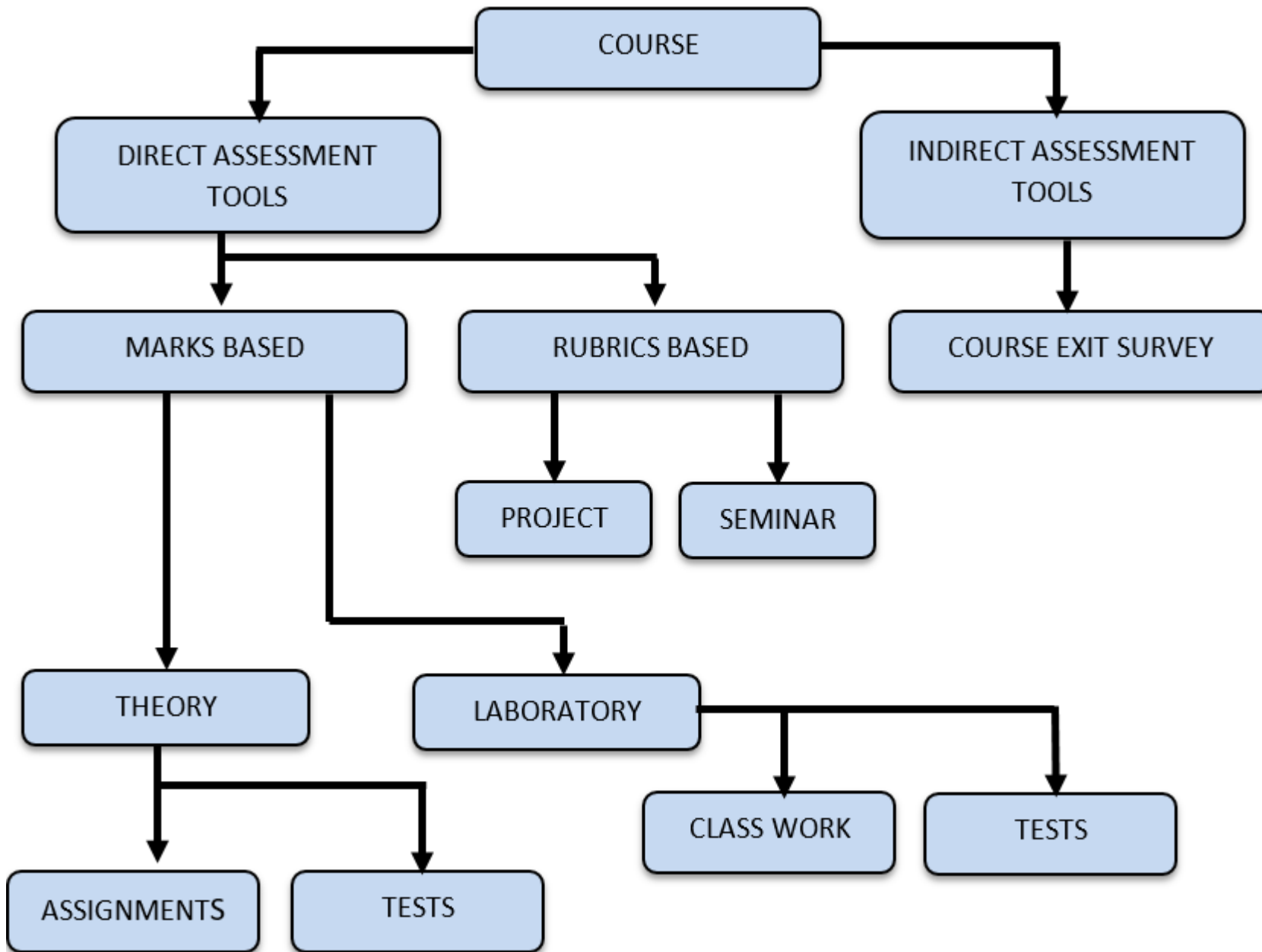


# COURSE OUTCOME

| THIRD SEMESTER                   |  |                       |
|----------------------------------|--|-----------------------|
| COURSE NAME: MECHANICS OF FLUIDS |  | COURSE CODE:<br>ME203 |
| SEMESTER: 3                      | ACADEMIC YEAR: 2018 –'19   | Scheme: KTU-2015      |
| Course Outcome No.               | DESCRIPTION  |                       |
| C203.1                           | <b>Explain</b> properties of fluid, pressure measurements and stability of floating and submerged bodies             |                       |
| C203.2                           | <b>Describe</b> the concepts of kinematics of fluid flow   |                       |
| C203.3                           | <b>Apply</b> the momentum and energy equations to fluid flow problems and practical applications                     |                       |
| C203.4                           | <b>Investigate</b> the behaviour of fluid flow and evaluate head loss in pipes                                       |                       |
| C203.5                           | <b>Illustrate</b> the effect of formation of boundary layer and its control  |                       |
| C203.6                           | <b>Apply</b> dimensional analysis to <b>design</b> physical or numerical experiments and to apply dynamic similarity |                       |

| THIRD SEMESTER: ME203 MECHANICS OF FLUIDS |          |             |            |             |          |          |          |          |          |          |          |             |
|---|----------|-------------|------------|-------------|----------|----------|----------|----------|----------|----------|----------|-------------|
| CO  | PO1      | PO2         | PO3        | PO4         | PO5      | PO6      | PO7      | PO8      | PO9      | PO10     | PO11     | PO12        |
| C203.1                                    | 3        | 3           | 2          | -           | -        | 2        | -        | -        | -        | -        | -        | 3           |
| C203.2                                    | 3        | 2           | -          | -           | -        | -        | -        | -        | -        | -        | -        | 2           |
| C203.3                                    | 3        | 3           | 3          | 2           | -        | 2        | -        | -        | -        | -        | -        | 3           |
| C203.4                                    | 3        | 3           | 3          | 3           | -        | 2        | -        | -        | -        | -        | -        | 3           |
| C203.5                                    | 3        | 2           | 2          | 2           | -        | 2        | -        | -        | -        | -        | -        | 3           |
| C203.6                                    | 3        | 3           | 3          | 2           | -        | -        | -        | -        | -        | -        | -        | 2           |
| <b>C203</b>                               | <b>3</b> | <b>2.67</b> | <b>2.6</b> | <b>2.25</b> | <b>-</b> | <b>2</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>-</b> | <b>2.67</b> |

| THIRD SEMESTER : ME 203 MECHANICS OF FLUIDS |          |             |            |
|---|----------|-------------|------------|
| CO  | PSO1     | PSO2        | PSO3       |
| C203.1                                      | 3        | 2           | 1          |
| C203.2                                      | 3        | 2           | 1          |
| C203.3                                      | 3        | 2           | 1          |
| C203.4                                      | 3        | 2           | 1          |
| C203.5                                      | 3        | 2           | 2          |
| C203.6                                      | 3        | 3           | 3          |
| <b>C203</b>                                 | <b>3</b> | <b>2.67</b> | <b>2.6</b> |



*Assessment Tools used in the Department for each course*

# ATTAINMENT OF CO

Two set of attainment levels are defined for Direct Assessment (D.A). One for the Internal assessment and another for University Examinations

## 1. INTERNAL ASSESSMENT

- **Attainment Level 3:** 80% of the students' scores more than the set target.
- **Attainment Level 2:** 70% of the students' scores more than the set target.
- **Attainment Level 1:** 60% of the students' scores more than the set target.

TARGET:

Assignments:  $\geq 60\%$  of the total marks

*Series Examination:*

$\geq 40\%$  of the total marks for KU

$\geq 45\%$  of the total marks for KTU

## 2. UNIVERSITY EXAMINATION

- **Attainment Level 3:** 80% of the students' scores more than the set target.
- **Attainment Level 2:** 60% of the students' scores more than the set target.
- **Attainment Level 1:** 40% of the students' scores more than the set target.

### TARGET:

≥50% of the total marks for KU

≥45% of the total marks for KTU



# Overall CO Attainment

*From Academic Year 2017-2018*

$$\mathbf{CO\ attainment\ level = (0.80 \times DA) + (0.20 \times IDA)}$$

*DA = Direct Attainment; IDA = Indirect Attainment*

$$\mathbf{DA = (0.5 \times CO\ attainment\ level\ in\ IA) + (0.5 \times CO\ attainment\ level\ in\ UE)}$$

- For theory courses (KU and KTU) :

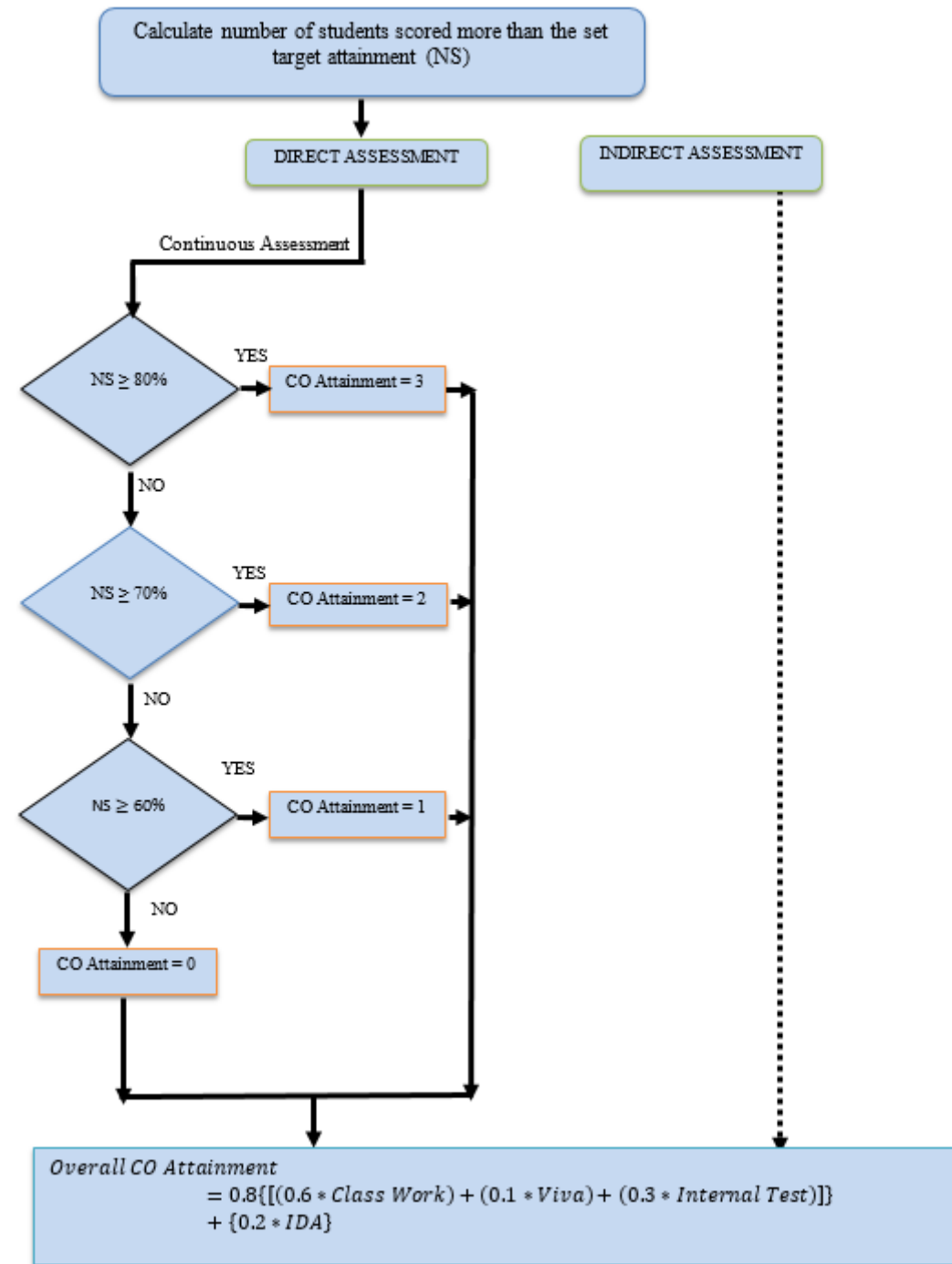
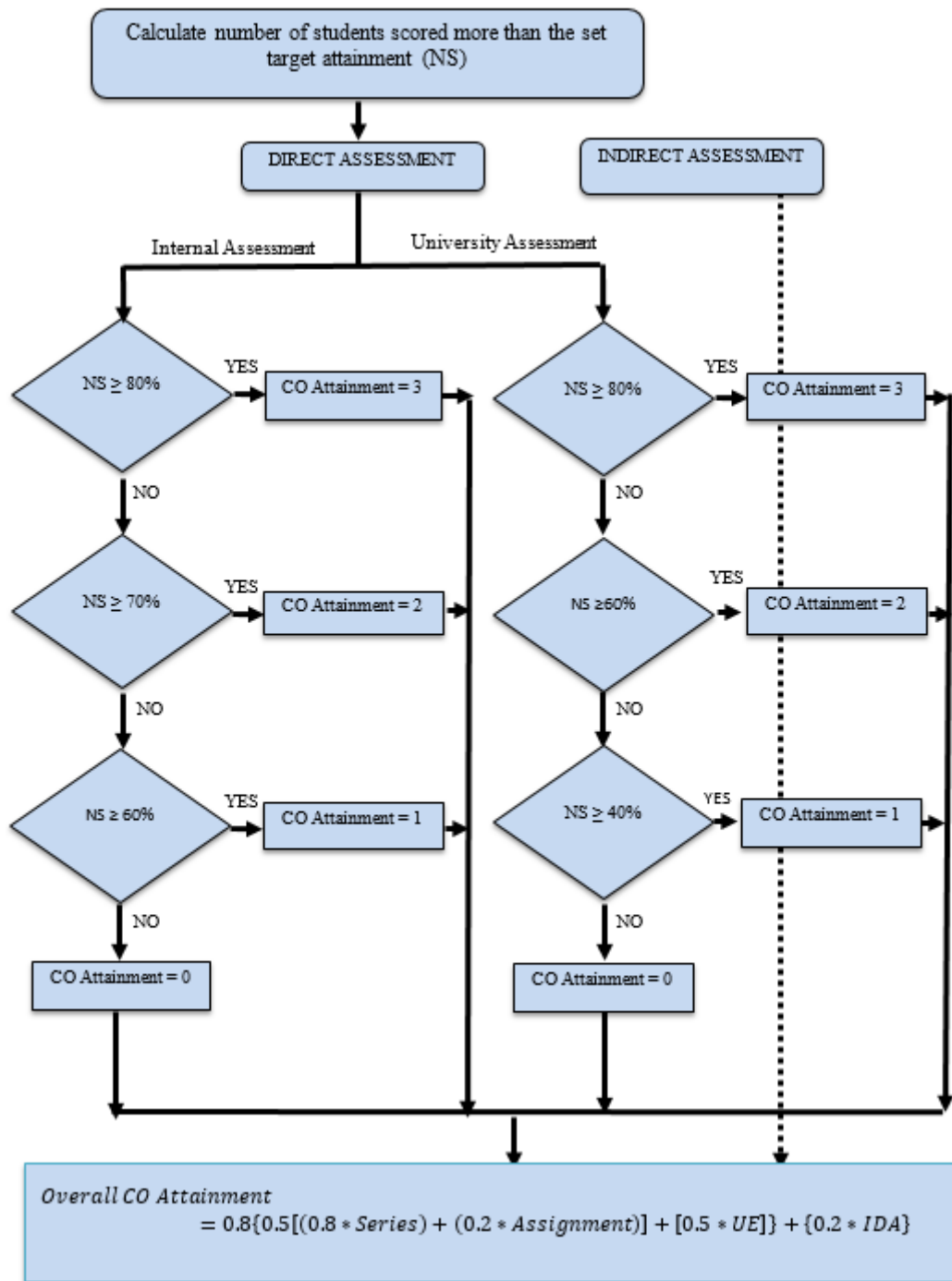
$$IA = (0.2 \times \textit{Assignments}) + (0.8 \times \textit{Series Tests})$$

- For lab courses (KU):

$$IA = (0.2 \times \textit{Assignments}) + (0.8 \times \textit{Series Tests})$$

- For Lab courses (KTU):

$$IA = (0.6 \times \textit{Class Work}) + (0.1 \times \textit{Viva}) + (0.3 \times \textit{Final Test})$$



# Attainment of PO and PSO

- *Up to Academic Year '16 - '17*

$$\text{Attained } PO_x \text{ for a course} = \left( \frac{COAL \times \text{Target of } PO_x}{3} \right)$$

Where  $COAL$  = CO Attained Level

$x$  takes the values from 1 to 12.

# Attainment of PO and PSO

- *From Academic Year '17 - '18*

$$\text{Attained } PO_x \text{ for a course} = \frac{\sum_{i=1}^{i \leq 6} \left( \frac{CO_i \times \text{Target of } PO_x}{3} \right)}{\text{Number of mappings}}$$

Where  $x$  takes the values from 1 to 12.

