

# **1 Attributes/Indicators/LOs**

## **1. Knowledge Base for Engineering**

### **1. Competence in Mathematics**

1. Specification mathematics (first order logic, set theory, Parnas tables, etc.) [Final Exam MC (L01)]

### **4. Competence in Specialized Engineering Knowledge**

1. Specification (Module interface specification (Abstract objects, ADTs, Generic), modules with external interaction, finite state machines, descriptive versus operational, UML, etc. ) [Final Exam MC (L02)]
2. Verification (White box, black box, analysis, etc.) [Final Exam MC (L03)]
3. Functional programming [Final Exam MC (L04)]
4. Object oriented programming [A3 Part 2]

## **2. Problem Analysis [Not Measured]**

1. Ability to identify reasonable assumptions
2. Demonstrates an ability to identify a range of suitable engineering fundamentals (including mathematical techniques) that would be potentially useful for analyzing a technical problem.

## **3. Investigation [Not Measured]**

1. Recognizes and discusses applicable theory knowledge base
2. Selects appropriate model and methods and identifies assumptions and constraints
3. Estimates outcomes, uncertainties and determines appropriate data to collect

## **4. Design**

- 1.** Recognizes and follows an engineering design process
  1. Recognizes and follows an engineering design process [A2, Part 2 (Report)]
- 2.** Recognizes and follows engineering design principles
  1. Software qualities [not measured]
  2. Software design principles (correctness, verifiability, etc); information hiding [Final MC (L08)]
  3. Modularization and interface design (assumptions, exceptions, methods, minimal, effective, etc.) [Final MC (L09)]
  4. Design patterns [Final Q34]
- 3.** Obtains experience with open-ended problems
  1. Obtains experience with open-ended problems [A4]

## **5. Use of Engineering Tools**

- 2.** The ability to use modern/state of the art tools
  1. git, make, LaTeX, doxygen, pyunit, junit, etc. [Final MC (L11)]

## **8. Professionalism**

- 1.** Understands the role of the engineer in society, especially in protection of the public and public interest
  1. Understands the role of the engineer in society, especially in protection of the public and public interest [Final MC (L12)]
- 3.** Is aware of the PEO and the role of licensing
  1. Is aware of the PEO and the role of licensing [Final MC (L13)]