Teaching the new course: MAM3085F
‘Computing for Chemical Engineers’

Haris Skokos
Department of Mathematics and Applied Mathematics

E-mail: haris.skokos@uct.ac.za
URL: http://www.mth.uct.ac.za/~hskokos/
Introduction

• Course’s scope:
  ✓ Introduce the basic principles of scientific programming.
  ✓ Utilize the SCILAB computing environment for solving scientific problems (with emphasis to chemical engineering).
  ✓ Present and implement several methods of numerical analysis.

• Challenges:
  ✓ New course.
  ✓ Many different (although related) subjects have to be covered.

• Objective:
  ✓ Teaching approaches for maximizing the effectiveness of the educational procedure.
Actions

• Knowing my students:
  ✓ Initial Poll
    • 72% had NO KNOWLEDGE of computer programming!
      (3rd year students of applied sciences!)

• Being aware of my students needs, problems and thoughts:
  ✓ 2 intermediate student evaluations.
  ✓ Final course and lecturer evaluation.

• Evaluating my performance:
  ✓ Teaching observation from HAESDU members.
Reflection (I)

• **Content and organizational issues:**
  ✓ It is difficult to satisfactorily cover the initially scheduled material in the provided time for lectures and tutorials.
    • The pace in many cases was too fast.
    • Lectures were continued in tutorials.
    • The students did not have enough time to digest the presented material.
  ✓ Tutorials were in some cases tiring: lasted for 3 hours and contained many, long examples.

• **Lecturing:**
  ✓ Select questions to be answered during lectures.
  ✓ Improve student’s involvement.
  ✓ Better management of teaching, practicing and reflecting time.
Reflection (II)

• General problems:
  ✓ The venue is not appropriate for this course (especially for tutorials).
  Note that the students use their own laptops.
Reactions (I)

• Content and organizational issues.
  ✓ Redesign several aspects of the course:
    • Increase the number of lectures (already scheduled for next year).
    • Have shorter tutorials.
    • Emphasize on the parts of the syllabus that are more important for the students.
    • Increase the number of tests and make them shorter (this year we had 3 tests that lasted 3 hours each and corresponded to the 50% of the final mark).
    • Improve the quality (and quantity) of provided notes.
Reactions (II)

• Improving lecturing.
  ✓ Better connection with previous lectures and tutorials.
  ✓ Slower pace.
  ✓ Discussion of ‘small’ questions with the involvement of more students.

• Monitoring the effectiveness of teaching procedure.
  ✓ Intermediate and final student evaluations.
  ✓ Teaching observation.

• General problems.
  ✓ Try to find a better venue for the course, like a computer lab.