CP515 Assessment Guideliness

June-Oct 2019

ILO #	ILO (At the end of CP515, the student should be able to do the following:)	Maximum marks assigned for Assessment # 1: Viva-voce exams on the laboratory performance	2: Viva-voce exams on the interim reports	3: Oral presentations	4: Final report	Total
1	**Derive mathematical models of practical process engineering systems in a unified framework where momentum, energy and mass transport phenomena occur simultaneously, supplemented by empirical relationships, where necessary**					**30**
1.1	demonstrate understanding of the first principles underlying the mathematical model (governing equations, boundary conditions and empirical equations)	8		6	2	
1.2	identify the limitations of the mathematical model developed in describing the real system	6		6	2	
2	**Simulate published case studies where the coupling between different mathematical models is implemented using MATLAB® and COMSOL Multiphysics®**					**40**
2.1	translate the model into the simulation software	10	2			
2.2	justify the procedure followed in 2.1	6	2			
2.3	generate numerical results by appropriate selection of solution procedure	4	2			
2.4	validate the results obtained	6	4		4	
3	**Critically analyse the simulation results by carrying out error analysis, sensitivity analysis and uncertainty analysis and by benchmarking the solution**					**30**
3.1	critical error analysis			2	6	
3.2	critical sensitivity/uncertainty analysis			2	6	
3.3	critical evaluation of the results obtained			4	10	
Manage time effectively by adhering to the deadlines previously agreed upon (2.5 marks reduction for each week of delay)						
	Total	**40**	**10**	**20**	**30**	**100**

<table>
<tr><th rowspan="3">ILO #</th><th rowspan="3">ILO (At the end of CP515, the student should be able to do the following:)</th><th colspan="4">Important Dates</th></tr>
<tr><th>1</th><th>2</th><th>3</th><th>4</th></tr>
<tr><th>Viva-voce exams on the laboratory performance</th><th>Viva-voce exams on the interim reports</th><th>Oral presentations</th><th>Final report</th></tr>
<tr><td>1.1</td><td>demonstrate understanding of the first principles underlying the mathematical model (governing equations, boundary conditions and empirical equations)</td><td rowspan="6">In-class during 08 July to 02 Sept 2019</td><td></td><td rowspan="2">08th July 2019</td><td rowspan="9">27th Sept 2019 (any delay would cost you -5.0 marks per one week delay, and -30 marks for more than one week delay).</td></tr>
<tr><td>1.2</td><td>identify the limitations of the mathematical model developed in describing the real system</td><td></td></tr>
<tr><td>2.1</td><td>translate the model into the simulation software</td><td rowspan="4">Report submission on 29th July 2019; Viva on 12th Aug 2019</td><td></td></tr>
<tr><td>2.2</td><td>justify the procedure followed in 2.1</td><td></td></tr>
<tr><td>2.3</td><td>generate numerical results by appropriate selection of solution procedure</td><td></td></tr>
<tr><td>2.4</td><td>validate the results obtained</td><td></td></tr>
<tr><td>3.1</td><td>critical error analysis</td><td></td><td></td><td rowspan="3">9th Sept 2019</td></tr>
<tr><td>3.2</td><td>critical sensitivity/uncertainty analysis</td><td></td><td></td></tr>
<tr><td>3.3</td><td>critical evaluation of the results obtained</td><td></td><td></td></tr>
</table>

As your case study, you may select a practical process engineering system of your own taste from existing literature. My choice is to determine the temperature profile of a viscous flow of non-Newtonian fluid through a domestic-scale screw expeller. A problem that I have been investigating into for a while with no satisfactory outcome. Your contributions would be appreciated.

Format of the reports is entirely of your choice. Your writing should be short and snappy (that is, to the point) and factual. Word to word reproduction of material available elsewhere will disqualify you in the CP515 course.

Hardcopies of the reports must be deposited in the letterbox of Prof. R. Shanthini AND softcopies must be emailed to admin@rshanthini.com in *.pdf or *.doc (.docx) format with the subject of the email as **CP515 Project Report_registration number** (I may not open the email otherwise).

If you need to clarify anything regarding the abovestated guidelines, please call at 071-5326835 or email to admin@rshanthini.com with the subject as **'CP515_registration number'**.

- prepared by Prof. R. Shanthini on 20 June 2019