IC150 Computation for Engineers
Course Outline, Sep-Dec 2016

Week	Topics	References
1	Problem solving	[RD] Ch.1 [SP] Ch.1
2-3	Memory, Functions	[AB] Ch.1 [VR] Ch.4-5,13,19 [RD] Ch.2 [SP] Ch.4 pp.81-90
4	Computers: history, structure	[VR] Ch.1-2
5	Conditionals, repetition	[AB] Ch.2 [RD] Ch.3,4 [VR] Ch.6,9
	Modular programming,	[KR] Ch.4
	top-down design with functions	[VR] Ch.13
6-7	Arrays, Strings	[AB] Ch.3.1 [AB] Ch.3.2 [RD] Ch.6
8	Command-line args, I/O	[AB] Ch.5 [VR] Ch.21
9	Structures	[KR] Ch.6.1-6.4, 6.7
10	Sorting, searching	[RD] Ch.5
11	Dynamic data structures	[AB] Ch.6 [RD] Ch.7 [VR] Ch.17 [SP] Ch.4 pp. 91-110
12-13	Numerical methods	[JI] Ch. 2.1-2.5, 4.1-4.2
	Scilab	[AB] Ch.9-11 [SL]
14	Abstract data types	[AB] Ch.7-8
15	Review	

Staff

Instructor: Timothy A. Gonsalves, 01905-267-001, tag@iitmandi.ac.in
TAs: Faria Rehman, Akansha Garg
{faria_rehman,akansha_garg}@students.iitmandi.ac.in
Lab: Maben Rabi, Tulika Srivastav, Sarita Azad, Kaustav Sarkar
{maben,tulika,sarita,srkr}@iitmandi.ac.in

Assignments

There will be a few tutorials. Lab assignments will be done in IC150P in conjunction with this course.

Minimum Attendance to pass the course:

Criterion	*Attendance*
> average in both quizzes	>70%
< average in only one quiz	>77%
< average in both quizzes	>85%

Evaluation for IC150: 2 quizzes (50%), final exam (50%), participation (5%)
Evaluation for IC150P will be done separately.

Text Books

[AB] A.R. Bradley, *Programming for Engineers*, Springer, 2011

[SP] V.A. Spraul, *Think Like a Programmer: An Introduction to Creative Problem Solving*, No Starch Press, 2012
{ Soft-copy available from the Library website }

[RD] R. G. Dromey, *How to Solve It By Computer*, Pearson, 1982

References

[KR] Kernighan and Ritchie, *The C Programming Language,* 2nd ed., Prentice-Hall, 1988
{ Buy this if you are serious about C programming }

[VR] V. Rajaraman, *Computer Programming in C*, Prentice-Hall, 2004

[JI] M.K. Jain, S.R.K. Iyengar & R.K. Jain, *Numerical Methods for Scientific and Engineering Computation*, 5th ed., Wiley Eastern.

[SL] Scilab documentation: http://wiki.scilab.org/ Scilab download: http://www.scilab.org/index.php/products/scilab/download

[KP] Kernighan and Pike, *The Unix Programming Environment*, Prentice-Hall, 1984