Review of <u>A Survey of Computational Physics</u>
By authors R. H. Landau, M.J. Paez and C.C. Bordeianu

Reviewer: Dr. Louis Kijewski, Monmouth University

When I started to review this book I had no knowledge of JAVA. After intermittently reading the book for two days, I was running the codes from the CD that came with the book. Within a week of occasional reading and without other help, I was running code with beautiful graphs.

This book will be excellent for a course in computational physics for undergraduate physics programs. For colleges and universities without a physics major, this book will be an important addition to the library of physics teachers who teach a general physics course to chemistry, math and engineering majors.

The authors cover a variety of topics from mechanics, electromagnetic theory, fluid mechanics, quantum mechanics, statistical mechanics, thermodynamics, digital signal processing and more. The treatment of nonlinear physics is great in that the authors use the computer with their developed codes (supplied on CD) to calculate the results of an otherwise complicated problem and exhibit those results in beautiful graphs.

The codes are mainly in JAVA, enabling all students and small colleges access since it is free.

Codes are explained as well as techniques to make them more efficient.

The text covers a topic in physics, the pertinent equations, their solutions with a computer and codes supplied by the authors in the text and on the CD, and graphs or animations of the solutions. What a way to learn physics!

There are some places where I would make changes:

$d(0)/dt$	replaced by	$dy^{(0)}(t)/dt$	(9.21)
$F(t,y^{(0)}, y^{(1)})$	replaced by	$F(t,y^{(1)}, y^{(0)})$	(9.22)
$[y^{(2)}]$	replaced by	$[y^{(1)}]$	top of page 200
$F(t,y^{(0)}, y^{(1)})$	replaced by	$F(t,y^{(1)}, y^{(0)})$	(9.23)

Eqn. (10.10) comes from (10.8) for odd functions. $f(t) = 0$ for $t<0$ is not an odd periodic function, so the sentence
"However, if there is no input signal for $t<0$, we do not have a truly odd function, and so small values of a_n may occur".
does not belong here.

The codes that I sampled worked nicely.   This is a good book for today's physics.