

Engineering Computation with MATLAB Review
David Smith

REVIEWER INFORMATION

Department: Computer Science School: Montana Tech of the Universit of Montana

COURSE INFORMATION

Course Title: Programming with MATLAB Grade Level: undergrad

Annual Enrolment: 45

Text In Use: MATLAB Programming with Applications for Engineers by Stephen J. Chapman

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1. What factors made you chose your current book?

It has the necessary details and illustrations for students that have never done programming before.

2. How does this book compete with your current text?

Overall, they cover similar topics and both have abundant examples and exercies, except this book covers some advanced programming concepts like, graph, queues, complexity.

3. Please examine the table of contents of *Engineering Computation with MATLAB* and answer the following:

- a. How does the Table of Contents match with your current course syllabus? Please elaborate.

Our syllabus is divided into 3 sections: The Basics-overview, variables manipulation, built-in functions, 2d plotting; Procedural programming: branching, loop, user-defined function, file IO; Further applications: 3d plotting, cell array, graphics (GUI), animation, numerical methods, simulation.

Consequently, this text has most of the topics in the syllabus covered, except this text has some topics on advanced concepts in the chapters 16~17, while we try to introduce the GUI in Matlab as some applications and comprehensive practice in the end of the course.

- b. Would you change the order of chapters? If so, how?

I am inclined to put Chapter 9 which is on Recursion to the last a few chapters of this book along with Sorting and Processing Graphs as some advanced programming concepts. Or put it after Chapter 5 on Functions as a natural extension of the concepts of function and scope.

- c. Do you, or have you, used this text for more than one course? Please explain.

No, I haven't used this text.

2. Please comment on the quality of the book's pedagogy. Are there pedagogical elements in other books you have used that you feel should be incorporated into this text? What are they?

The pedagogy in this book is similar to the text book we are using, with concepts in the beginning of each section, and implemented by short example codes and explanations, and with summaries, engineering examples and exercise at the end. And I do like the "Self Tests" in this text, as it provides a way for students to check some core concepts. In fact, I am planning on implementing some online short self quiz as a check of the readings for the students.

One pedagogical element I found interesting in the textbook "Programming with MATLAB 2016" by Huei-Huang Lee, where the programming concepts are all introduced based on MATLAB codes for solving problems.

3. How well does the author present the material in terms of readability, clarity, etc?

I think it is very well presented.

4. Which topics in your course present you with the greatest teaching challenge? How does this text handle these topics?

I found students were facing a lot of difficulties when dealing with the array representation of an image. More specifically, they were not very comfortable when asked to manipulating an image, e.g., colors, cropping and rotation.

The book does a very good job by starting with the nature of an image and the concept of pixels, and then move on with the operations on an image.

5. Are there other topics that you would suggest deleting or shortening?

No.

6. Are there topics that you would suggest expanding?

I was expecting some discussions on nested control structures in Chapter 4 and their applications in matrices.

7. How do you find the quality of the examples? Are there too many or too few?

I think they are very good. And I especially like the engineering examples at the end of each section, as they give the students some "real life" feeling in programming.

I think it would be beneficial to add one or two more small examples when introducing a new programming concept, like if, for etc.

8. Do you find that the problems are sufficient? Do they relate well to the material?

Yes, I think they are good.

9. How do you find the quality of the illustrations and photos? Are there too many or too few?

The illustrations and photos are good enough. I think it will be better to add more screenshots when introducing MATLAB user interfaces.

10. When considering the adoption of a new edition, what kinds of revisions are most important to you? For example, new problems, new examples, up-to-date references, etc.

To me, I find the "up-to-date" reference is very important to me, as I don't like to teach based on an old version of a software. Also, new and creative problems and some comprehensive projects would also be nice additions.

11. What supplements do you use in teaching your course? Which would you like to see provided with this text and why? Specifically, are there any particular digital supplements that you would like to see included?

I haven't used other supplements previously. I would like to have the downloadable codes for all the examples in the book, so that the students can actually run the examples themselves when they do the readings or reviewing.

12. Do you utilize online homework in your course? In your opinion, do you think online grading of programming homework would be a useful tool to accompany this text?

I haven't used one but I am planning to. One I am considering is the Zybook, as it provides some quiz questions immediately after a reading, so that students will be able to know if their understandings are correct.

13. In your opinion what are the best features of this text?

As I mentioned in a previous section, I like the engineering examples, as well as many engineering related exercise at the end of each section very much. Also, I think the line-by-line interpretation of the listing examples are also very useful for students. Moreover, the inclusion of line numbers in listing examples is also great.

Please provide any additional comments you may have below.