

M E 522 References and Review Material

John M. Cimbala, Penn State University. Latest update: 21 December 2017

Background and Review Material - This is general information that the student is expected to know. This material will not be covered in class. Brief learning modules are provided at the following links for your review.

- [Dimensions, Units, and Significant Digits](#) - A general review of dimensions and units, and the different unit systems (English vs. Metric). Also a discussion about the importance of significant digits.
- [Solutions of Ordinary Differential Equations](#) - A general review of how to solve simple ordinary differential equations.
- [Review of Complex Variables](#) - A general review of complex variables, along with some definitions.
- [Runge-Kutta Marching Technique](#) – Explanation of how the popular fourth-order Runge-Kutta marching technique works, along with the appropriate equations.
- [Cross-Integration of a Function of Two Variables](#) – How to integrate when you have a function of *two* variables (partial integration) instead of only *one* variable (total integration). A video is also available on YouTube at <https://www.youtube.com/watch?v=sdrSsMkm9VM>.
- [Equation sheet from M E 521](#), Fall 2017 – for quick reference to many useful equations.

M E 521 and 522 Engineering Library Reserve List Fall Semester 2017 and Spring Semester 2018

| Call number | Year | Author(s) | Title |
|-------------|------|-----------|-------|
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Required Textbook:

| | | | |
|-----------|------|---|---|
| QA901.K86 | 2016 | P. K. Kundu, I. M. Cohen, and D. R. Dowling | <i>Fluid Mechanics, 6th edition</i> (5 th and 4 th editions are also acceptable) |
|-----------|------|---|---|

General fluid mechanics texts: [later versions may be available; these are the ones I own]

| | | | |
|------------|------|---------------------------------|--|
| QA911.B33 | 1967 | George K. Batchelor | <i>An Introduction to Fluid Dynamics</i> |
| TA357.V35 | 1982 | Milton D. Van Dyke | <i>An Album of Fluid Motion</i> |
| QC145.2 | 1987 | L. D. Landau and E. M. Lifshitz | <i>Fluid Mechanics, 2nd edition</i> |
| TA357.S453 | 1990 | F. S. Sherman | <i>Viscous Flow</i> |
| QA929.W48 | 1991 | Frank M. White | <i>Viscous Fluid Flow, 2nd edition</i> |
| QA901.C8 | 1993 | I. G. Currie | <i>Fundamental Mechanics of Fluids</i> |
| TA357.P29 | 2013 | Ronald L. Panton | <i>Incompressible Flow, 4th edition</i> |

Boundary layer texts: [later versions may be available; these are the ones I own]

| | | | |
|----------------|------|---------------------|--|
| TL574.B6S283 | 1979 | Schlichting, Herman | <i>Boundary-Layer Theory, 7th edition</i> |
| TA357.5.T87S34 | 2011 | Schetz, Joseph A. | <i>Boundary Layer Analysis, 2nd edition</i> |

Stability texts: [later versions may be available; these are the ones I own]

| | | | |
|-----------|------|-----------------------------|---|
| QC151.C4 | 1961 | Subrahmanyan Chandrasekhar | <i>Hydrodynamic and Hydromagnetic Stability</i> |
| QA911.D72 | 2004 | P. G. Drazin and W. H. Reid | <i>Hydrodynamic Stability, 2nd edition</i> |

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Turbulence texts: [later versions may be available; these are the ones I own]

| | | | |
|------------------|---------|------------------------------|---|
| TL574.T8B3 | 1953 | George K. Batchelor | <i>The Theory of Homogeneous Turbulence</i> |
| QA911.M6313 | 1971-75 | A. S. Monin and A. M. Yaglom | <i>Statistical Fluid Mechanics, Mechanics of Turbulence</i> |
| QA913.T44 | 1972 | H. Tennekes and J. L. Lumley | <i>A First Course in Turbulence</i> |
| QA913.H5 | 1975 | J. O. Hinze | <i>Turbulence</i> |
| TA357.5.T87 W542 | 2006 | David C. Wilcox | <i>Turbulence Modeling for CFD, 3rd edition</i> |

Mathematics texts: [later versions may be available; these are the ones I own]

| | | | |
|------------|------|--------------------------------|---|
| QA911.A69 | 1962 | R. Aris | <i>Vectors, Tensors, and the Basic Equations of Fluid Mechanics</i> |
| QA221.N38 | 1973 | A. Nayfeh | <i>Perturbation Methods</i> |
| QA303.H55 | 1976 | F. B. Hildebrand | <i>Advanced Calculus for Applications</i> |
| QA401.K7 | | E. Kreyszig | <i>Advanced Engineering Mathematics, 10th edition</i> |
| QA331.C524 | 1996 | R. V. Churchill, <i>et al.</i> | <i>Complex Variables and Their Applications</i> |
| QA433.S28 | 2005 | H. M. Schey | <i>Div., Grad., Curl, and all that: An Informal Text on Vector Calculus, 4th edition</i> |