

StudyGuide for *Fluid Mechanics*

Preface

The following materials are provided as a study guide for the text *Fluid Mechanics* by Frank White. A brief summary of the key concepts and theory is presented for each chapter along with the final form of basic equations (without detailed derivations) used in the various analyses being presented. In most cases, a detailed explanation for the physical significance of each term in a fundamental governing equation is given (e.g., linear momentum, pg. III-8) to assist the student in identifying when a given term should be included in the analysis.

Example problems are provided for major sections. In each case, the starting general equation used in the solution is given followed by any necessary simplifications and the resulting complete solution. Where appropriate, the control volume and coordinate system used in the analysis are shown with the problem schematic. In many cases, an explanation is given with the final numerical answer to help the student understand the engineering significance of the answer (e.g., forces on curved surfaces, pg. II-18). In selected cases, computer based solutions to example problems are provided as an example to the student in the use of computer based problem solving techniques (e.g., parallel pipe sections, pg. VI-23).

For problems areas involving multiple steps in the solution, a summary of the steps used in a typical problem solution sequence is provided and enclosed in a boxed border (e.g., rigid body motion, pg. II-22). Areas where the author's experience has shown that mistakes in the analysis can easily occur are noted as **Key Points** (e.g., laminar flat plate boundary layer, pg. VII-5) throughout the material.

Finally, the author of this study guide appreciates the opportunity to contribute to the instructional materials provided with one of the leading texts in the area of fluid mechanics and to collaborate with an educator with whom he has long has the highest respect and had the privilege to further his education in fluid mechanics while a student at Georgia Tech.

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