

## NEED QUICK ACCESS TO PATENTS



Ever been in the midst of research and realized that easy access to U.S. Patents would be the answer to your problems? U.S. Patents on microfilm from Research Publications, Inc. offers to attorneys, researchers, inventors, and librarians the largest single body of scientific and technical information in existence. RPI offers a complete retrospective file of U.S. Patents and current subscriptions, as well as the Official Gazette and the CDR File. Access is immediate, and information retrieval is quick and easy. Delivery of current subscriptions is weekly, within four weeks of date of issue. Find the answers to your questions with U.S. Patents on microfilm from:

**rp**

research publications, inc.

12 Lunar Drive, Woodbridge, Ct 06525 (203) 397-2600

exposition of the method of finite Fourier transforms. As mentioned before, we distribute a set of notes to the students. These notes were developed in collaboration with Professor Amundson, and we plan to refine and publish them in textbook form in the future. The use of overhead transparencies is very helpful in covering the relatively broad set of topics in the mathematical detail necessary, and provides the student with a feel for mathematics and its use. A great deal of class time is spent on "talking about" problems, and on the role and use of mathematics in chemical engineering in general.

A fundamental question arises as to whether all this should be done in a chemical engineering department. Some reasons for our doing so were noted in the introductory section. In addition, it is my observation that mathematics courses offered in mathematics departments, even if they are titled "applied", tend to be rather theoretical in nature. Also, in general, mathematicians do not care about solving problems, much less model-building. The type of course we offer not only gives the student a good mathematical background, but also gives him confidence in formulating and solving problems. At the end of the course he is conversant with standard mathematical techniques, knows their limitations, and can readily use them

to solve non-trivial problems in practice. Student feedback has been uniformly positive. □

### ACKNOWLEDGMENT

It is a pleasure to thank my colleagues, James J. Carberry and James P. Kohn for providing historical information regarding the course.

### REFERENCES

1. Amundson, N. R., Chem. Eng. Edn., 3, 174 (1969).
2. Amundson, N. R., "Mathematical Methods in Chemical Engineering: Matrices and Their Application," Prentice-Hall, Englewood Cliffs, N. J. (1966).
3. Boyce, W. E. and R. C. DiPrima, "Elementary Differential Equations and Boundary Value Problems," Third Edition, Wiley, New York (1977).
4. Carnahan, B., H. A. Luther and J. O. Wilkes, "Applied Numerical Methods," Wiley, New York (1969).
5. Davis, H. T., "Introduction to Nonlinear Differential and Integral Equations," Dover, New York (1962).
6. Ince, E. L., "Ordinary Differential Equations," Dover, New York (1956).
7. Jenson, V. G. and G. V. Jeffrys, "Mathematical Methods in Chemical Engineering," Second Edition, Academic Press, New York (1977).
8. Marshall, W. R., Jr. and R. L. Pigford, "The Application of Differential Equations to Chemical Engineering Problems," Edwards Brothers, Ann Arbor, Michigan (1948).
9. May, R. M., Science, 186, 645 (1974).
10. May, R. M., Nature, 261, 459 (1976).
11. Mickley, H. S., T. K. Sherwood and C. E. Reed, "Applied Mathematics in Chemical Engineering," Second Edition, McGraw-Hill, New York (1957).
12. Nayfeh, A. H., "Perturbation Methods," Wiley, New York (1973).
13. Rössler, O. E., Z. Naturforsch., 31a, 259 (1976).
14. Schmitz, R. A., K. R. Graziani and J. L. Hudson, J. Chem. Phys., 67, 3040 (1977).
15. Villadsen, J. and M. L. Michelsen, "Solution of Differential Equation Models by Polynomial Approximation," Prentice-Hall, Englewood Cliffs, N. J. (1978).
16. Weinberger, H. F., "A First Course in Partial Differential Equations," Blaisdell, Waltham, Massachusetts (1965).

### ChE books received

- Heat Pumps, R. D. Heap. Halsted Press, John Wiley & Sons, New York, 1979, 155 pages, \$9.95.
- Advances in Photochemistry, Vol. 11, ed. by J. N. Pitts, Jr., G. S. Hammond, Klaus Gollnick, and Daniel Grosjean. John Wiley & Sons, New York, 1979, 538 pages, \$35.95
- Pulverized—Coal Combustion and Gasification, Theory and applications for continuous flow processes, edited by L. O. Smoot and D. T. Pratt. Plenum Press, New York, 1979, 333 pgs.