**Richard Dahlke**, How to succeeed in college mathematics: a guide for the college mathematics student. BergWay Publishing, PO Box 701785, Plymouth, MI 48170-0970
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Making the transition from high school to university is tough for many students, putting many first year instructors in the position of coaches that offer advice and encouragement. Richard Dahlke brings to this book thirty-four years of teaching lower-division courses at the University of Michigan in Dearborn. Its 600 pages cover a range of topics that include both useful information and sound advice to help students get the most out of their university experience: the college environment, organization of courses and programs, prerequisites, admission and internal examinations, time management and study skills, confidence building, the nature of mathematics, reading mathematics texts, working exercises and solving problems, balance of responsibilities of teacher and student. Although written for an American audience, a Canadian student will find much that is useful. Its considerable length makes it a tough read from cover to cover, but the contents list and index make it a convenient resource book.

There is much in this book that I have said myself to incoming university students, and the author covered all of the fundamental points for students to heed if they are to be successful. Basically, students are invited to a maturity that engenders accepting responsibility for their learning, grasping their interests and capabilities, formulating their goals, working independently but knowing when and how to access assistance and what they can reasonably expect from their instructors. I was pleased to note Dahlke's insistence on having an attitude towards mathematics that leads them to probe for meaning and coherence. However, there are a few points that bear emphasis. An important issue in any teaching-learning situation is the alignment of what the student can bring with what the intructor can deliver. Often, a productive relationship is confounded by a clash of expectation about the outcome. Students come with ideas about learning, and mathematical conceptions that may be inadequate, fuzzy or just plain wrong. A good instructor will take this into account, observing that teaching may have destructive as well as constructive aspects, so that they can make contact with students; correspondingly, students must expect that eir notions will be challenged and deepened. Furthermore, no matter how inspired the teaching and articulate the textbook, for robust learning to occur, students need to put the material through "their own sieve", coming to terms with it in their own way. The failure of some students to appreciate this is exemplified in some of the student comments, which the author uses and analyzes to good effect.

In some cases, I felt that, while I essentially agreed with the author, some shading of his comments is necessary. One issue, for example, is the taking of lecture notes; for many students, there is a conflict between taking notes and being able to follow along during the lecture. Some students simply try to get everything down and sort it out later, without the benefit of having understood anything at all as it was said. They need to be more selective in what they record. Part of the answer is for them to be completely up to date and to at least skim the textbook in advance so that they have some idea as to what is coming. The should record carefully the statement of a result or example, but be sparing with the proof or solution, putting down the key ideas, just enough to allow them to reconstruct the details when they get home. Certainly, I agree with Dahlke that the notes should be reviewed quickly after the lecture, but am not sure that it is necessary to make a fair copy. One bit of advice for students who must have detailed notes is to work with a friend: one takes notes while the other listens, the notes are photocopied and one briefs the other after the lecture.

Another section that needs elaboration concerns final grades. It is certainly true that students harbour naive assumptions about their performances being redeemed by the bell curve, but the author seems to be optimistic about the lack of pressure on instructors to give other than honest grades. Unfortunately, in many environments, mathematics departments can get grief from parents and faculty oversight committees about grades, and an untenured instructor must always keep course evaluations in the back of his mind. There are also subtle pressures. Instructors do not want to disadvantage students in more demanding courses, who need the currency of grades to retain scholarships, seek employment and get accepted to graduate studies, especially when the GPA can factor in a shaky start to sabotage an otherwise fine academic career. However,

the advice to students to do their best and not rely on the system to bail them out is still well-taken.

One topic not covered in the book is plagiarism and the distinction between legitimate and illegitimate student collaboration. While this is always been with us, in the past, with less recourse to technology and less emphasis on term grades, it was manageable. In many schools the problem is serious. While it may be the result of ignorance, it can also be a matter of students deliberately defrauding the system, especially if grades are merely a means to an end. Students need to be aware that this is unfortunately part of the academic landscape, be left in no doubt as to what is ethical behaviour, and be persuaded that in the long term the main persons being cheated are themselves when they end up with no long term benefit from their education.

This book is comprehensive and practical, and a worthwhile purchase for any student embarking on a university career who wants to get a leg up on what to expect and how to manage the experience. It can also find a place on the bookshelves of advisors, undergraduate reading rooms and libraries.