CONTENTS

PREFACE
Robert D. Mathieu

EDITOR’S NOTES
Roger G. Baldwin

1. The Climate for Undergraduate Teaching and Learning in STEM Fields
Roger G. Baldwin
Competing forces complicate efforts to enhance STEM undergraduate education.

2. Supportive Teaching and Learning Strategies in STEM Education
Karl A. Smith, Tameka Clarke Douglas, Monica F. Cox
This chapter proposes strategies and best practices for designing engaged learning environments in STEM classes.

3. Advancing STEM Teaching and Learning with Research Teams
Brian P. Coppola
Teaching groups can apply standard research practices to improve STEM education.

4. Facilitating Reforms in STEM Undergraduate Education: An Administrative Perspective
Thomas A. Litzinger, Richard J. Koubek, David N. Wormley
Academic leaders share lessons learned from their experiences implementing STEM education reforms.

5. Discipline-Based Efforts to Enhance Undergraduate STEM Education
Joan Ferrini-Mundy, Beste Gucler
STEM educators can learn from the reform efforts of other fields.

6. The National Perspective: Fostering the Enhancement of STEM Undergraduate Education
Judith A. Ramaley
This chapter examines undergraduate STEM education from a national level.
7. Preparing STEM Doctoral Students for Future Faculty Careers
Ann E. Austin, Henry Campa III, Christine Pfund, Donald L. Gillian-Daniel, Robert Mathieu, Judith Stoddart
This chapter describes programs at the doctoral education level to prepare future STEM faculty.

8. Climate Change: Creating Conditions Conducive to Quality STEM Undergraduate Education
Roger G. Baldwin
Initiatives to promote STEM undergraduate education improvements must be coordinated, not piecemeal.

INDEX