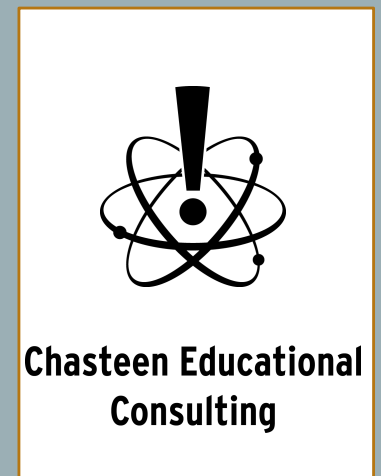
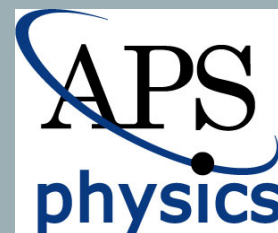
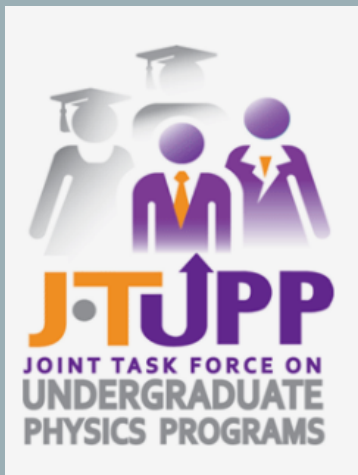


HOW CAN WE IMPLEMENT PHYS21 RECOMMENDATIONS? **CASE STUDIES FROM EXEMPLARY PROGRAMS.**

Stephanie Chasteen

Chasteen Educational Consulting



This work is supported by NSF under DUE # I540570.

WHAT WE DID

5 departments with significant activities to support student success; Mixture of large and small, public and private.

- **Carthage College (Wisconsin)**
- **Florida State University**
- **St. Mary's College of Maryland**
- **University of California Davis**
- **University of Wisconsin La Crosse**

Looked for consensus at the site about most key strategies.



WHAT DID THESE DEPARTMENTS DO THAT'S SO GREAT?



Effective strategies



Empowering processes

WHAT DID THESE DEPARTMENTS DO THAT'S SO GREAT?



Effective *strategies*



Empowering *processes*

WHAT DID THESE DEPARTMENTS DO THAT'S SO GREAT?



Effective *strategies*

- Intro course reforms
- Undergraduate research
- First year seminars
- Flexible major



Empowering *processes*

WHAT DID THESE DEPARTMENTS DO THAT'S SO GREAT?



Effective *strategies*

- Intro course reforms
- Specialized courses
- Career seminars
- Multiple pathways into degree



Empowering *processes*

- Strong vision
- Intentional action
- Embrace experimentation
- Publicizing results

CONCRETE STRATEGIES



NEED YOUR GOALS TO DRIVE YOUR CURRICULUM?

Learning goals to support diverse careers: Phys21 Report, Chapter 4

Use an assessment
committee



“Without the program goals, we may not have thought about implementing [the assessment committee]” - Eric Gansen (faculty, La Crosse)

*“Don’t skimp on assessment... you’ll be surprised at how often you’ll learn something useful. And if you don’t assess yourselves, someone else will.”
- Julie Dahlstrom (chair, Carthage)*

NEED TO RECRUIT OR RETAIN MORE, & MORE DIVERSE, STUDENTS?

Redesigning the major: Phys21 Report, Chapter 5C

Offer multiple
pathways into
the degree



Offer multiple
degree tracks

- Intro course offered every semester, same time.
- “Excitement first, math second.”
- Algebra or calculus based intro course fulfills requirement
- Formal or informal tracks or concentrations aligned w/ faculty areas
- 3-2 engineering programs

*“Pay attention to the flow of the major and appeal to diverse students”
- Jean Quashnock (former chair, Carthage)*

NEED TO IMPROVE STUDENT LEARNING, COMMUNITY, OR RECRUITMENT?

Designing or Redesigning Courses, Phys21 Report, Chapter 5D

Use active
learning in the
introductory
course



Make a
majors-focused
intro course

- AAPT New Faculty Workshop
- Integrated lab/lecture (e.g., Studio/SCALE-UP)
- Separate course or section for physics-interested students
- Honors course

“Spending 6 hours a week together builds strong relationships, and helps them to be more durable physics majors,” Paul Cottle (faculty, Florida State)

NEED TO IMPROVE STUDENT SKILLS IN THE MAJOR?

Designing or Redesigning Courses, Phys21 Report, Chapter 5D

Provide courses in essential skills

- Calculus support class
- Physics Problem Solving and Communicating Physics classes



NEED TO PREPARE FOR CAREERS?

Designing or Redesigning Courses, Phys21 Report, Chapter 5D



Create career seminar or curriculum

- One-credit seminar series
- Career curriculum in intro course

NEED CO-CURRICULAR ACTIVITIES TO RETAIN STUDENTS & IMPROVE LEARNING?

Co-Curricular Activities, Phys21 Report, Chapter 5E

Support students & community

- Emerging Scholars program, especially for URM
- Events focused on women or URM



Support undergraduate research

- Faculty teaching load credit
- Support through curriculum

“Our students have a sense of belonging.” - Randy Harris, Davis.

La Crosse, Carthage, St. Marys, Florida, Davis

EMPOWERING PROCESSES



ENACTING PROGRAMMATIC CHANGE

Phys21 Report, Chapter 6

Phys21 recommends strategic planning at the department level, to empower the department as the unit of change.

- *Get to know your students*
- *Adopt learning goals*
- *Map learning goals to program components*
- *Develop a plan and implement it*
- *Assess results*
- *Support continuous improvement*



Here is how these case study departments embodied those philosophical recommendations, in ways that empowered change.

BE INTENTIONAL

Decide on a vision for your students and follow it.



CARTHAGE
COLLEGE

*“Have a clear sense
of your mission,”
Julie Dahlstrom
(chair)*



*“Don’t expect
miraculous results
in a year or two.
Almost everything
we tried didn’t
work out well the
first time. Believe
in your vision, and
persist.”- Kevin
Crosby (former
chair)*

EMBRACE EXPERIMENTATION

ST MARY'S
COLLEGE of MARYLAND
The Public Honors College

Take responsibility for change, and support it with data, formal review, and leveraging national efforts.

“You have to be willing to say yes more than no.” - Charles Adler (former chair)

“Don’t worry about the budget,” - Josh Grossman (chair)



“It’s much easier because we’re all doing it,” - Erin DePree (faculty)

COLLABORATE AND PUBLICIZE

UNIVERSITY of WISCONSIN
LA CROSSE

Work with other units and administration and make your work visible.

"Give the administration what they want," Gubbi Sudhakaran (chair)



SUPPORT A STRONG UNDERGRADUATE COMMITTEE & ADVISORS



FLORIDA STATE
UNIVERSITY

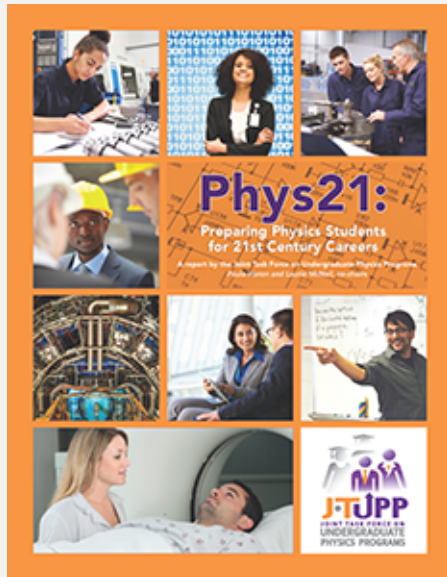
UC DAVIS
UNIVERSITY OF CALIFORNIA



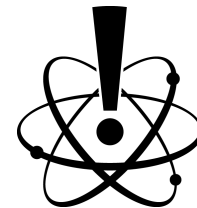
“We are committed to our undergraduates. We put people in the intro class who like what they’re doing.” - Randy Harris (Davis)

THANK YOU!

Download report and case studies at
<http://www.compadre.org/JTUPP/report.cfm>



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