Inclusion, Equity, and Program Improvement with the APS/AAPT Guide to Effective Practices in Physics Programs (EP3)

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What is the EP3 Guide?

Information to help departments with:

• Periodic program assessment (departmental review)
• Bringing together known literature on topics and collecting practices recognized by the community as effective in areas where there is insufficient evidence-based knowledge
• Encouraging continuous improvement of physics programs using evidence-based methods
• Providing a leverage point for departments to advocate for resources to improve their programs

**Key:** flexible, not prescriptive, mindful of diversity of local contexts
What is the EP3 Guide?

Help department chairs (& other program leaders)

• **Documented**: Bring together known literature of effective practices

• **Accepted**: Collect practices recognized by the community as effective when there is insufficient evidence-based literature

• **Advocate**: Collect information for departments to use in advocating for resources to improve their program

• **Usefulness**: Encourage discussions in departments on continuous improvement of physics programs using evidence
  - External program assessment and review; to improve usefulness of assessment

• **Needs**: Engage PER community on the needs departments have – what gaps are there in the literature?
EP3 Team Members

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What the EP3 Guide is not...

It is not accreditation:

• But ABET’s Applied and Natural Science Accreditation Commission is looking to accredit natural science programs and math programs (geology at Univ. of Arkansas last year).

It is not a ‘to-do’ list departments are required to complete
Chapters:

• Introduction, how to navigate and use the guide
• Assessment: developing a useful and efficient culture of assessment
• Effective practices (~25 “sections”)
• Departmental leadership
• Departmental review:
  • Guide to reviewers
  • Preparing for a review
• Appendices: Examples of student learning goals and program learning goals, assessment instruments, additional resources
I have a problem!

1. I want to know how to: increase # of majors
2. Goal map suggests...
I have a problem!

**Goal: Increase number of undergraduate majors [and/or minors] and graduates**

**Recruiting**
- Institutional Admissions
- Outreach Programs
- Public Persona

**Retention**
- Advising Practices
- Mentoring practices
- Student Engagement

**Student Success**
- Facilities
- Climate
- Equity and Diversity

**Career Preparation**
- Intro Courses
- Laboratory
- New/Revised/Diversified Programs

**Internships**
- Teacher Prep
- Dual-degree

**Programs**
- Dual-degree
- Teacher Prep
- New/Revised/Diversified Programs
Goal: Increase number of undergraduate majors [and/or minors] and graduates

- Recruiting
  - Institutional Admissions
  - Outreach Programs
  - Public Persona

- Retention
  - Advising Practices
  - Mentoring practices
  - Student Engagement

  Student Success
  - Facilities
  - Climate
  - Equity and Diversity

  Career Preparation
  - Intro Courses
  - Laboratory

  New/Revised/Diversified Programs
  - Internships
  - Teacher Prep
  - Dual-degree
1. I want to know how to: retain more students
2. How would I ....
   a. improve retention?  **Retention**
3. Goal map also suggests I look at: advising, climate, pedagogy, career preparation, ....
• Effective practices are inclusive and promote equity
• These considerations are interwoven through all sections
  • Recruiting/Retention
  • Another example: Mentoring/Advising
### Tentative Section List

- Culminating integrative experiences
- Career preparation
- Communications skills
- Community Engagement / Outreach
- Computational skills
- Departmental climate
- Equity, diversity, and inclusion
- Ethics
- *The physical environment: encouraging collaboration and learning*
- Faculty development
- Implementing research-based instructional practices
- Individuated degree tracks: engineering / applied physics
- Institutional partnerships: dual-degree physics / engineering programs
- Internships
- Introductory courses for Physical Science and Engineering
- Introductory courses for Life Sciences
- Laboratory / experimental skills
- Learning assistants
- Mentoring / advising
- Non-STEM major courses
- Online education
- Recruiting
- Retention
- Teacher preparation program
- Undergraduate research
- Upper-level physics courses
Effective Practices: Elements of a typical section

Section Format

• Description (basic boundaries of the content)
• Benefits
• Effective practices subsection
  o Effective Practice Themes
    • Actionable Practices
      – Implementation strategies
• Programmatic assessments
• Evidence and resources
Effective practices: specific actions that programs can take that address the question, “How might a program achieve goal X.”

- Effective practices use verbs that suggest a specific action.
- Effective practices should be documented as likely to support programs in achieving excellence.
- Effective practices do not need to be universal effective practices; they are context-dependent.
• Section on Inclusion, Diversity, and Equity
  o In development
  o sneak peek...

• Chapter on effective leadership
  o In development
  o focused on chairs (new and experienced)

• Online communities
  o Support departments in effectively implementing the recommendations of the Guide
  o Starting Fall 2019
  o Contact David Craig if interested in learning more
What the EP3 Guide Is and Is NOT

The EP3 guide is

- Collection of community knowledge and evidence-based practices
- Authored, reviewed, approved by physics community
- *Living* document (not static), with stewardship by APS COE
- Ethics and diversity included throughout – they are not add-ons!
- Primarily online
- Effort to implement evidence-based pedagogy
- Effort to transform mandatory assessment into useful exercise
- Suggestions on how to improve all aspects of a program
- Opportunity to extend reach of education research

The EP3 guide is **NOT**

- Accreditation or Program certification
- Mandate to conform or a ‘To-do’ list departments are required to complete
- Finished (yet)
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Additional References

**SPIN-UP 2002 (enrollment):**

aps.org/programs/education/undergrad/faculty/spinup/

**T-TEP 2012 (teacher education):**

phystec.org/webdocs/TaskForce.cfm

**Phys21 2016 (careers):**

compadre.org/phys21/

**Vision and Change 2011 (biology):**

visionandchange.org

**Active learning:**


**PTEPA (assessment):**

Physics Teacher Education Program Analysis: phystec.org/thriving