

Guiding Your Students to STEM Success

August 8, 2016
for the
USG STEM Summit 2016

Barbara Brown

Barbara.Brown@usg.edu

404-962-3107

Academic Affairs and Policy

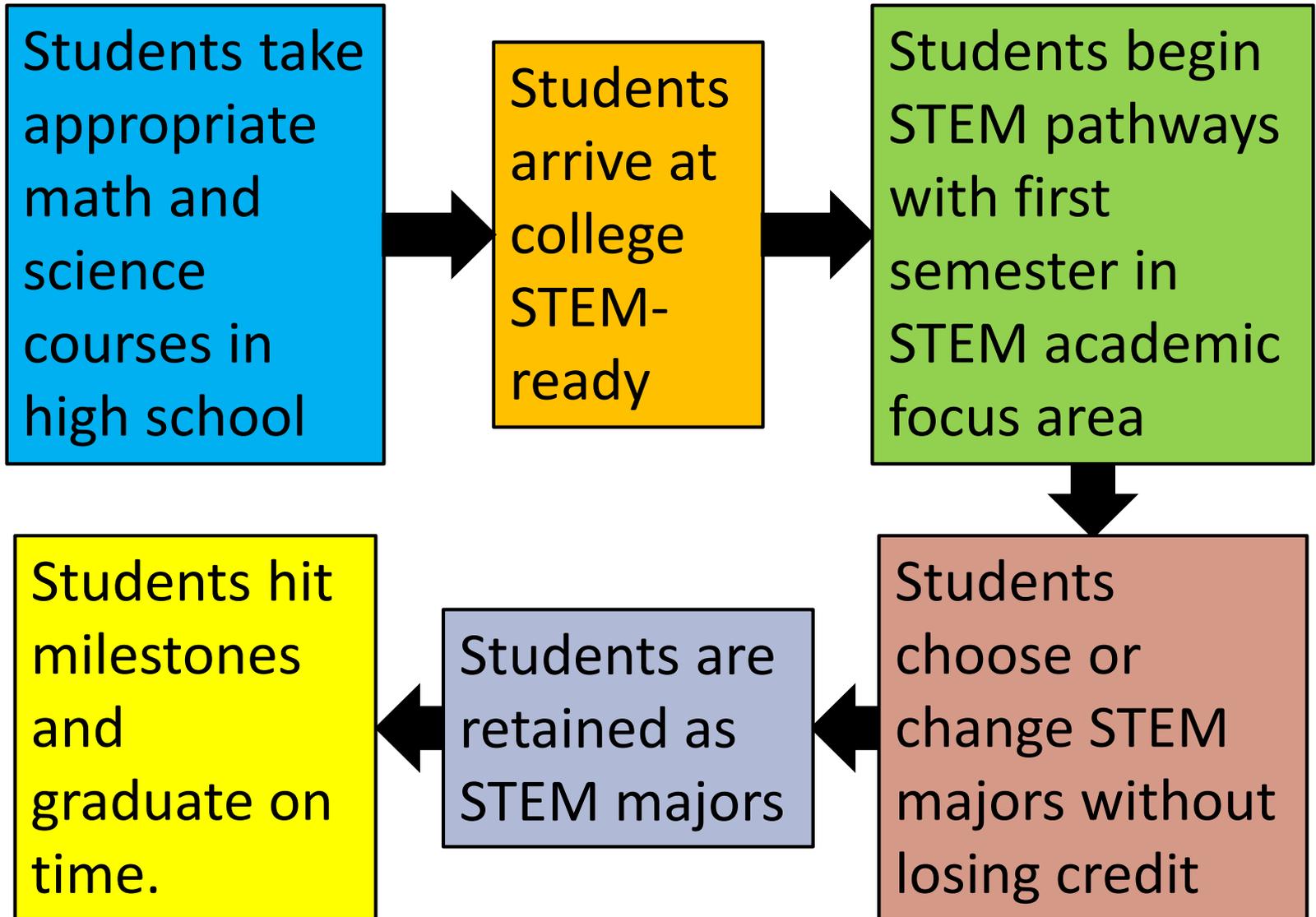


Guided Pathways

- Notion of guided pathways is to provide guidance to students in terms of course-taking and milestones to track progress.

COURSES	REQ. HRS	COURSES	REQ. HRS
AREA A: Essential Skills (Require C or better).....	9	AREA D: Science, Mathematics, and Technology.....	9-11
Required courses:		Group I: Eight-hour laboratory sequence	
ENGL 1101*.....	3	Choose one 2-course science sequence:	
ENGL 1102*.....	3	{ CHEM 1211 & CHEM 1211L (c).....	4
		and	
Choose one (a):		{ CHEM 1212 & CHEM 1212L (c).....	4
MATH 1113*.....	3	or	
MATH 2431.....	4	{ PHYS 2211 & PHYS 2211L (c).....	4
		and	
AREA B: Institutional Foundations.....	4-6	{ PHYS 2212 & PHYS 2212L (c).....	4
Required course:		Group II: Additional mathematics course	
COMM 1201*.....	3	Choose one (d):	
		MATH 1431* (e, f, g).....	3
Choose 1-3 hours from the following (a):		MATH 2431 (e, f, g).....	4
PRSP 1010.....	3	MATH 2432 (e, f, g).....	4
RSCH 1203.....	1		
Foreign Language 1002* or higher (b).....	3		

Guided STEM Pathways



Preparing for College

- Basic Required High School Curriculum mandates that students have:
- 4 units of mathematics
 - Algebra I/Coordinate Algebra
 - Geometry/Analytic Geometry
 - Algebra II/Advanced Algebra
 - 4th unit
- 4 units of science
 - Biology
 - Physics or physical science
 - Chemistry, earth systems, or environmental science
 - 4th unit

Arriving at College STEM-Ready

- Students majoring in science, technology, and mathematics should arrive at college ready to take MATH 1113 – Precalculus in Area A.
- Students majoring engineering or planning to attend Georgia Tech should arrive at college ready to take calculus.
- How do we ensure that students know what it takes to be STEM-ready?

Arriving at College STEM-Ready

- **Improve STEM college readiness for K-12 students** by defining mathematics and science requirements for STEM pathways and communicating clearly and repeatedly to high school students and counselors what it means to be “STEM-ready” in mathematics.

Tracking STEM-Readiness

- Of freshmen entering your institution each fall and declaring STEM majors, what percentage arrive(d) STEM-ready?
 - Fall 2015
 - Fall 2016
 - Fall 2017

Creating STEM Pathways (Program Maps)

USG Program Map Template - STEM			
Year 1			
Term 1		Term 2	
Course	Credits	Course	Credits
Area A1: ENGL 1101 (or institutional A1 course)	3	Area A1: ENGL 1102 (or institutional A1 course)	3
Area A2 math course: MATH 1113 (Pre-calculus) or Calculus I	3	Area D STEM math course: Calculus I or Calculus II	3
Area D STEM Lab Science 1	4	Area D STEM Lab Science 2	4
Area B, C, or E elective	1 - 3	Area B, C, E or F elective	1 - 3
Area E: POLS 1101	3	Area B, C, E or F elective	3
Semester Total	14 - 16	Semester Total	14 - 16
Milestones		Milestones	
<ul style="list-style-type: none"> • Complete ENGL 1101 • Complete Area A2 mathematics course • Complete at least 15 credit hours • Maintain at least a 2.0 grade point average 		<ul style="list-style-type: none"> • Complete ENGL 1102 • Complete all Area A requirements • Complete all Area D requirements • Declare major • Meet with an advisor • Accumulate 30 or more collegiate credits • Maintain at least a 2.0 grade point average 	

Program Map Essentials

- Encourage students to take at least 15 credits per semester to promote on-time degree completion.
- Clearly specify appropriate science sequences for STEM students.
 - Science programs must require two four-hour laboratory science courses in Area D.
 - Biology, Chemistry, and Physics specify particular courses for STEM majors.
- Include milestones to be reached at the end of each semester.

Program Map Essentials

- Develop a STEM-focused first-semester course plan

Year 1, Term 1	
Course	Credits
Area A1: ENGL 1101 (or institutional A1 course)	3
Area A2 math course: MATH 1113 (Pre-calculus) or Calculus I	3
Area D STEM Lab Science 1	4
Area B, C, or E elective	1 - 3
Area E: POLS 1101	3
Semester Total	14 – 16

Tracking Your Progress With STEM Students

- One year retention as STEM majors for students entering:
 - Fall 2015
 - Fall 2016
 - Fall 2017
- One year credit accumulation for STEM students entering:
 - Fall 2015
 - Fall 2016
 - Fall 2017