INCREASING STUDENT RECRUITMENT AND RETENTION IN THE GEOSCIENCES: a Pilot Program

Debra W. Woodall, PhD
Professor, Oceanography/Geology
Daytona State College
Persistence and Retention Trends and Issues: *getting off on a bad foot?*

- “The community college serves nearly 40% of all college students in the country.”

- “Only about half of first-time community college students persist to the second year…”
Introduction to Oceanography Lecture (3-credit hours)

- Started in 2008
- First OCE class at DSC
- No lab available
Created in 2010

Four AA Transfer Tracks
  • Marine Science
  • Marine Biology
  • Environmental Science
  • Ocean Engineering

AS Environmental Science Technology
WHY DAYTONA STATE College?

<table>
<thead>
<tr>
<th>Compare</th>
<th>FL Private</th>
<th>FL Public</th>
<th>DSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Per Credit HR</td>
<td>$1,185</td>
<td>$235</td>
<td>$105</td>
</tr>
<tr>
<td>Per Yr (30hrs/FL resident)</td>
<td>$41,460</td>
<td>$6,576</td>
<td>$3,135</td>
</tr>
</tbody>
</table>
MEET OUR PILOT TEAM!

Supporting and Advancing Geoscience Education in 2YCs

Joshua Poniatowski
Academic Advising

Dr. Debra Woodall—Oceanography, Geology

Autumn Meyers-Parker
Academic Advising

Karen Braley
Chemistry, Biology
Piloting Goals…

INCREASE STUDENT RECRUITMENT AND RETENTION IN THE GEOSCIENCES

Now: Marine Science, Marine Biology, Environmental Science, Ocean Engineering

Future: Geology, Meteorology
Meeting our Goals
Increase Retention

1. “…sense of belonging positively influences academic achievement, retention, and persistence.”

2. “…students that were underchallenged were more likely to leave the college.”

3. “…early engagement in career practices increased retention.”

4. “Students had a better chance of staying in college if they had opportunities to interact with faculty.”
Providing a Sense of Belonging

Importance of Structure

- Fall, 2013
  - New $250K facility/equipment/instrumentation
Providing a Sense of Belonging

Importance of Communication

- Increase Communication
  - Importance of those codes!!
Importance of Communication

- Increase Communication
- Re-built AA Transfer Tracks (i.e., Education Plans)

THANKS JOSH AND AUTUMN!!
Providing a Sense of Belonging

Importance of Communication
“...the past twenty years of research on undergraduates suggests that the most potent forms of positive involvement are with academics, faculty, and peers, and that degree completion, in particular, is negatively affected by noninvolvement.”
Providing a Sense of Belonging

Importance of Communication

- **IMES Orientation**
  - SLS1127
  - Met their peers/faculty
    - Student testimonies
  - DSC Resources
    - Financial Aid
    - TrIO
  - Charlene Latimer
    - Barriers to Student Success
Challenging our Students and Early Engagement in Career Practices

Courses Specific to Major

- EVR2001/L
- OCE1001/L
- OCB2000C
# Challenging our Students and Early Engagement in Career Practices

## UCF Environmental Studies Education Plan

Please note that requirements of the university or college that you plan to attend may have different requirements. Please consult your advisor before beginning your coursework.

### Sample Plan of Study

Assumes placement into Intermediate Algebra (MAT1033) and foreign language completed in high school.

<table>
<thead>
<tr>
<th>FIRST YEAR</th>
<th>1st Semester</th>
<th>Sem. Hours</th>
<th>2nd Semester</th>
<th>Sem. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS 1117</td>
<td>Science Orientation</td>
<td>0.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENC1101</td>
<td>College Composition</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLS1122</td>
<td>Managing Success</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT1033</td>
<td>Intermediate Algebra</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSC1010C</td>
<td>General Biology I</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAC1105</td>
<td>College Algebra</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSC1011C</td>
<td>General Biology II</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVR2001</td>
<td>Intro to Env. Science</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENC1102</td>
<td>Writing &amp; Research</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OCE1001L</td>
<td>Oceanography Lab</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SYG2000</td>
<td>Intro to Sociology</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SECOND YEAR</th>
<th>1st Semester</th>
<th>Sem. Hours</th>
<th>2nd Semester</th>
<th>Sem. Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STA2023</td>
<td>Elementary Statistics</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HUM2020</td>
<td>Intro to Humanities</td>
<td>2.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM1025c</td>
<td>Intro to Chemistry</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSC1121</td>
<td>Physical Science</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CHM1043c</td>
<td>General Chemistry I</td>
<td>4.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECO2023</td>
<td>Micro Economics</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SPC2608</td>
<td>Oral Communication</td>
<td>3.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Humanities Core (AML/LIT)</td>
<td>2.00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Track applies to UCF only.

**Science Elective Options:** PHY1020 (Energy and its Environmental Effects, 3 credits), CHM1020 (Chemistry in Society, 3 credits), OCE1001 (Intro to Oceanography, 3 credits), MET1010 (Meteorology, 3 credits), BOT1010 (General Botany w/lab, 4 credits), or GLY2001c (Physical Geology w/lab, 4 credits).

Last Revised 09/15/2017
Challenging our Students and Early Engagement in Career Practices

OCE1001 LAB

- Piloted in Fall, 2013
- Limited enrollment
  - Designed specifically for AA Transfer Students
  - 16 maximum
  - Permission required
- Field intensive
- Requires independent research project
  - Completed in one semester
Why is this Lab important?

 “…student’s level of social integration…and intellectual self-confidence…is significantly and positively related to eventual degree completion.”
IMES and Undergraduate Research at a 2YC

OCE1001 LAB

- Give our students experiences that would:
  - Strengthen skills
  - Increase confidence
  - Prepare and make them more competitive for transfer
  - Help to identify academic and career goals
IMES and Undergraduate Research at a 2YC

OCE1001 LAB

- Gave me an opportunity to:
  - Interact closely with my students
  - Identify academically immature students
    - Early intervention
21-foot Jones Brothers
IMES Undergraduate Research at DSC—OCE1001 Lab

MENTOR PARTNERSHIPS

- NASA
- NOAA
- MDC
- MSC
- SJRWMD
Rigorous Field/Lab Experiences
DSC—we have a winner!!

Brent Meister
AA Marine Biology

Emily Reyes
AA Environmental Science

Robin Kelly
AS EST Program

Angela Boney
AA Environmental Science
IMES and Undergraduate Research at a 2YC

DSC Student AcE Symposium

- Student Academic Excellence
- A multi-disciplinary symposium for our students to showcase their work
- Spring, 2018
STUDENT RECRUITMENT
Supporting and Advancing Geoscience Education in 2YCs

If you wanna be big—ya’ gotta think big!
What can YOU do to help student recruitment, persistence and retention??

- **Tell them about IMES**
  - Enroll them in an IMES major!
  - Show them the Webpage
  - Encourage them to visit/contact
  - SIGN THEM UP FOR THE LAB!!

- **Help them identify the appropriate major**
  - AA in Environmental Science or AS in Environmental Science Technology
A.S. Environmental Science Technology

A brief overview

- Designed for students NOT wanting to obtain a B.S.
  - Also note student academic maturity
    - Need of challenge
- Contains program-specific courses that will NOT transfer to a 4-year institution
  - OCE2013/L
  - PCB2033/L
  - EVR2933 & EVR2943
Increasing Student Retention and Recruitment—
It’s going to take all of us working together

IMES can do it with your help!!
The Gateway to Student Success Begins Here...
Advising Update-IMES

Karen Braley
10/6/17
2016 Data

Student Enrollment by Major Code

- Environmental science
- Marine biology
- Marine science
- Ocean eng
- Meteorology
- Env. Ag.
- Geology

Number of students

FSU33 UF47 USF34 FIU45 USF64 UWF34 FGCU32 UF75 FAU43 FSU60 UF46 USF41 2230EST
2017 Data

Student Enrollment by Major Code

- Environmental Science
- Marine Biology
- Marine Science
- Meteorology
- Ocean eng.
- Env. Ag
- Geology

Number of Students

FSU33 UF47 USF34 FIU45 USF84 UWF34 FGCU32 UF75 FAU43 FSU60 UF46 USF41 UF58
NSF Project
What are We Doing?

- Retention and Success
  - Tracking by demographics
  - Based on changes
    - Active learning
    - Orientations
    - Student support
TOTAL RACE/ETHNICITY COMPLETION BREAKDOWN IN CHANGED V. UNCHANGED COURSES IN TERM 1

Data Collected
Orientation
Established benefits of orientations

Goals

- Establish a cohort for students
- Ensure students are progressing successful within their program
- Collect data from students regarding recruitment
- Ensure students are aware of college resources
- Ensure students are aware of IMES opportunities
## Transfer Requirements

<table>
<thead>
<tr>
<th>University</th>
<th>Program</th>
<th>Course</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida International University</td>
<td>Marine Biology</td>
<td>BSC1010/L,</td>
<td>261302</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSC1011/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1045/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1046/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2210/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2211/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY2053/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY2054/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>or PHY2048/L</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY2049/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2311/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2312 or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2311 and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STA2023</td>
<td></td>
</tr>
<tr>
<td>University of South Florida</td>
<td>Marine Biology</td>
<td>BSC1010/L;</td>
<td>260101</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSC1011/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1045/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1046/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2210/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2211/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1053/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1054/L;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STA2023;</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2312</td>
<td></td>
</tr>
<tr>
<td>University of West Florida</td>
<td>Marine Biology</td>
<td>BSC1011,</td>
<td>261302</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1045,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2311,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STA2023,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2210 and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM2211 or</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1053 and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1054</td>
<td></td>
</tr>
<tr>
<td>Florida Gulf Coast University</td>
<td>Marine Science</td>
<td>BSC1010/L,</td>
<td>030205</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSC1011/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1045/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1046/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>GLY2010/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2311/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1053/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>STA2023</td>
<td></td>
</tr>
<tr>
<td>University of Florida</td>
<td>Marine Science</td>
<td>ECO2023,</td>
<td>030104</td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSC1010/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>BSC1011/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2233 OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC2311,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC1140,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>MAC1114,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1045/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>CHM1046/L,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OCE1001,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PHY1053/L</td>
<td></td>
</tr>
</tbody>
</table>
Student enrollment in major specific courses

Students Enrolled a Major Courses

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of students</th>
<th>Number of students who took a course in major</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015/2016</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>2016/2017</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>
Recruitment Event Results

Outcome of Recruitment Events

- ShORE
- TRIO
- IMES
Orientation Feedback
Effective

Meeting
Previous Students

Resources
Motivation

Meeting professors
Scholarships
Difference between AS and AA
Orientation Feedback
More Information

Scholarships
Internships

Research
Careers

What classes to take
How can you help?
How can you help?

– Promote the orientation
– Spread awareness about the program
– Help students navigate the People Soft major codes
– Encourage students to talk to faculty and ask questions