

# CSU CAMPUS AS A LIVING LAB

CSU, SACRAMENTO

PROJECT NAME: Bio Conversion Processing Facility

CALL CHAMPION: Ryan Todd

LEAD FACULTY PARTNER: Brook Murphy

## Learning Outcomes

- Describe proposed course in one sentence; including campus sustainability element
- What specific skills will students learn? What knowledge will they gain?
- What Sustainability Outcomes does your team want the students to achieve?
  - 100% bio-waste diversion of campus waste — academic course work to teach students using bio-waste as resource to close - the - loop
  - Bio-conversion techniques-real world applications, i.e.
    - Cost Savings
    - Carbon Sequestration
    - Team Building
  - Bio waste as a resource
  - Resource applications

## Connecting to CALL

- How does this proposed course align with CALL program objectives?
- Which activities can CALL program support?
- What is the team's vision for the next year as part of the CALL redesign program?
  - Integration of students into campus operations
  - Campus operations integrated for real-work learning opportunities
  - Creation of bio-conversion processing area
  - Get it started

## Overcoming Obstacles

- Are there mismatches between desired learning outcomes and sustainability outcomes?
- Do you need to modify existing outcomes?
  - None
  - No

## Tracking Success

- How will you know if students achieved Sustainability Outcomes?
- How will you know if this redesigned course is an improvement over the current version? How will you measure?
  - Pile of organic materials will be bio converted into compost.
  - Progress could be determined by measuring an increase interest in outside majors & minors with sustainability as a focal point.

## Taking Action

- What tasks/activities will the students perform?
- What role will facilities/sustainability officer have in redesign process and course delivery?
  - Bio-conversion technologies
  - Coordination
  - Guest lecture/video/assignments

## Future Tasks

### Designing the assignments

- Structure of assignments (group/solo)
- Sequencing of assignments
- What kind of formative assessment/feedback along the way?
- Background info needed to achieve goals of this course?

### Defining Criteria for Success

- Characteristics of the finished product
- How will you assess whether product demonstrates student learning?
- How will you assess whether students have addressed Sustainability Outcomes?
- How will you describe assignment to students?
  - Reflective assignment
  - Case studies
  - Multiple choice
  - Activity assignments

## CALL OBJECTIVE

The 'Campus as a Living Lab' Grant Program is a unique opportunity to partner faculty and facilities management staff in using the campus as a forum for the exploration of sustainability concepts and theories.

# Campus Bio-Waste Conversion at Sacramento State

Sacramento State is building a bio-waste conversion facility capable of handling campus food and landscape waste on-site, turning our waste into a valuable resource. Producing our own compost reduces operational costs while simultaneously providing our students with a hands-on laboratory where faculty can teach the science of bio-conversion and organic composting. This dynamic addition to the curriculum gives students practical knowledge to help decrease the University's financial and environmental impact.

## Team Members

**Dr. Brook Murphy,**  
*ENVS Department*

**Ryan Todd,**  
*Sac State Sustainability*

**Dr. Dudley Burton,**  
*ENVS Department*

**Joey Martinez,**  
*Sac State Sustainability*

**Landscaping and Grounds  
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## Goals

### Short term:

- Educate students about various bio-conversion methods with hands on real world activities
- Redesign Urban Agriculture in Aquaponics class (ENVS 147)
- Teach students how the university waste management program operates while reducing both waste and cost
- Reduce campus waste

- Create finished compost for campus use
- Incorporate the campus bio-conversion facility into campus aquaponics

### Long term:

- Become a zero waste campus
- Carbon sequestration and monitoring
- Become a model for sustainable communities and other universities
- Train future environmental professionals and leaders
- Reduce campus food insecurity

## Urban Agriculture in Aquaponics

ENVS 147

- Academic course to teach innovative food cultivation techniques for small-space intensively managed systems, including hydroponics and aquaponics
- Campus environment and waste management issues used as case study for building sustainable communities
- Students evaluate alternative campus waste and food policies, by-product strategies, and costs
- Students learn how campus waste streams can be incorporated into vermiculture and aquaponics to produce fresh, high-quality food for campus consumption
- Addresses sustainability issues and potentials

