Team Members

Tina Evans, Assoc. Professor, Sustainability Studies (Lead)
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Whitney Chandler, Teaching Assistant, Student & Researcher
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Tracey Hughes, Librarian
Becky Potter, Professor, English/Communications
John Saunders, Professor, Wilderness Studies
Natalie Savage, Student & Researcher
Tom Smiley, Assoc. Professor, Restaurant & Culinary Management
Cynthia Zyzda, Professor, Visual Arts & Humanities
Outline

• Key Principles & Guiding Vision
• Background on Permaculture
• Educational Programming
• Community Outreach Programming
• Greenhouse Options
• Potential Revenue Streams
• Potential Grant Opportunities
• Existing Local (Routt County) Efforts
• Project Status & Tentative Timeline
• Discussion
Key Concept

Permaculture principles as the overarching guide
Developing leaders with the passion, innovative potential, and solid practical experience necessary to make effective contributions to sustainability projects that involve social, business, scientific, technological, and economic dimensions.
Project Goals

- Comprehensive, immersive, practical learning experiences with sustainability and permaculture principles as the solid foundation and drivers.

- Net zero energy impact.

- Enhance and support the educational mission of CMC.

- Offer both indoor and outdoor learning and gathering spaces for educators and students for discussions and class meetings.

- Home to an approximately 2,000 square foot, four-seasons greenhouse, that relies minimally, if at all, on fossil fuel heating and cooling technologies.
A bit of background on permaculture...
Australia in the 1970s

- David Holmgren & Bill Mollison

- About relationships among people, dwellings, climate, plants, animals, soil, and water
  - Integration of land use & community building

- A focus is on food, but that is not the only focus of permaculture
  - Includes social and economic aspects
Permaculture’s Professional Recognition

- **Permaculture Institute** is current ‘accrediting’ body
- PINA is being established as an accreditation agency (Permaculture Institute of North America)
# Professional Competencies for Permaculture

- Education
- Media
- Site Design & Development
- Community Services
- Finance & Business
- Technical Development
- Resource Development
- Architecture & Building
- Research

*From [http://permaculturenorthamerica.org/history/](http://permaculturenorthamerica.org/history/) on 11/6/13*
Potential Occupations for Permaculturists

- **Arts**
  - Photographers
  - Authors
  - Artists
  - Illustrators

- **Building Trades & Related**
  - Designers
  - Landscape architects
  - Architects
  - Builders

- **Business**
  - Ecopreneurs
  - Marketers
  - Consultants

- **Education**
  - Researchers
  - Educators

- **Sustainability Specific**
  - Activists
  - Ecologists
  - Practitioners

- **Agriculture**
  - Consultants
  - Food producers
Similar Colorado Degree Programs

- Large variation in types & names of programs, but no specific permaculture degree

- Available at certificate, AA, BA & Masters level

- Sampling presented here w/Colorado focus
Sampling of Degrees

Community/Junior Colleges
• Northeastern Junior College
• Delta Montrose Community College
• Otero Junior College
• Trinidad State Junior College
• Lamar Community College
• Pickens Technical College
• Emily Griffith Opportunity School

4-Year Colleges
• Fort Lewis
  — Minor in Agroecology/Sustainable Agriculture
• Colorado Mesa University
  — Associates degree in Sustainable Agriculture
• Colorado State University (CSU)
  — Minor in Organic Agriculture
  — Master of Agriculture in Integrated Resource Management
Permaculture Design Certificate Programs

- Variation in depth, length, and cost
Program Outline for an Existing 13-Day Course

- Principles of Natural Systems
- Sustainable Design Methodologies
- Patterns in Nature, Culture and Society
- Reading the Land & Understanding Natural Processes
- Large Scale Land Restoration Techniques
- Water Harvesting Techniques
- Design Principles of Sustainable Human Settlements
- Grey Water Recycling
- Natural Building Strategies
- Cultivated & Productive Ecologies
- Food Forests, Plant Guilds, Gardens for Self-Sufficiency
- Energy Conservation Technologies
- Appropriate Technologies and Renewable Energies
- Urban Environment Permaculture
- Wildlife Management and Biological Pest Control
- Land Arts and Community Activism
- Invisible Structures: EcoVillages & Credit Unions
- Community Supported Agriculture
- Strategies for an Alternative Nation
- Group Design Project

http://www.permaculture.org/nm/index.php/site/permaculture_design_course/
## Permaculture Design Certificate Details

| Organization                  | Location                  | Month    | No. of Days | Cost   | Cost/Day   | College Credits? | 10 participants | 15 participants | 20 participants |
|-------------------------------|---------------------------|----------|-------------|--------|------------|------------------|----------------|----------------|----------------|----------------|
| CRMPI                         | Basalt, CO                | August   | 14          | 1775   | 126.785714 |                  | $17,750         | $26,625         | $35,500         |
| HIP Agriculture               | HI                        | Varies   | 18          | 1950   | 108.333333 |                  | $19,500         | $29,250         | $39,000         |
| Lyons Farmette                | Lyons, CO                 | March    | 14          | 1200   | 85.714286  |                  | $12,000         | $18,000         | $24,000         |
| University Centers of San Miguel | Telluride, CO          | Late July| 14          | 1150   | 82.142857  | 4 credits through mesa | $11,500         | $17,250         | $23,000         |
| Permaculture Institute        | CO, NM, Costa Rica, Etc. | July     | 13          | 1800   | 138.461538 |                  | $18,000         | $27,000         | $36,000         |
|                               |                           |          |             |        |            |                  | $0              | $0              | $0              |
| **Avg. cost of course**       | **1575**                  |          |             |        |            |                  | **$15,750**     | **$23,625**     | **$31,500**     |
Staffing Request: New FTE Faculty Position: Duties

- Develop and teach curriculum related to permaculture & sustainable food systems.
- Work very closely with greenhouse manager to develop and participate in education research associated with the greenhouse.
- Teach in the Sustainability Studies B.A. program.
- Student advising.
- Participate with various campus and college committees, and with community outreach.
Education & Teaching Experience

- Master’s degree in Sustainable Agriculture, Agroecology, Horticulture, Ecology, Sustainable Food Systems, or closely related field. PhD. Preferred.
- Permaculture design certification & significant experience in permaculture design & management of permaculture systems.
- Experience with greenhouse development & management, preferably in a cold winter climate. Experience in designing & managing outdoor gardens and/or orchards.
- Teaching experience commensurate with program needs.
- Curriculum development experience.
- Project management experience desired.
New FTE Faculty Position: Qualifications

Outreach

• Experience coordinating events with campus, the college and the community.
• Experience recruiting students.

Values

• Demonstrated understanding of and commitment to sustainability as a concept and practice.
• In-depth interest in and commitment to developing sustainable food systems through educational engagement and direct action.
• Demonstrated commitment to educating diverse people in food system concepts and practices.
• Enthusiasm and talent for developing effective partnerships with community organizations, local government, and other institutions and agencies relevant to sustainable food system praxis.
Staffing Request:

New FTE Staff Position: Duties

- Design & Manage effective food growing systems for greenhouse and park.
- Apply permaculture design principles.
- Assist with developing curriculum & food-related, hands-on learning experiences for courses and student clubs.
- Assist and collaborate with faculty extensively.
- Recruit, train, mentor, and supervise student interns to assist with greenhouse and garden planning, development, and management.

- Develop partnerships with food-related organizations in the local community and region.
- Engage in outreach and student recruitment activities.
New FTE Staff Position: Qualifications

Education

• Bachelor degree in Sustainable Agriculture, Agroecology, Horticulture, Ecology, Sustainable Food Systems, or closely related field. Masters degree preferred.
• Permaculture design certification & significant experience in permaculture design and management of permaculture systems highly preferred.
• Teaching experience preferred; higher education experience highly preferred.

Hands-On Experience

• Greenhouse development and management, preferably in a cold winter climate (plant hardiness zone 4 or below).
• Experience designing and managing outdoor gardens and/or orchards.
• Program development and management experience, including managing budgets.
• Permaculture design and management of permaculture systems.
• Project management experience highly preferred.
• Supervisory experience.
New FTE Staff Position: Qualifications

Special Skills

• Excellent communication skills (both oral and written).
• Strong ability to collaborate with diverse people and community organizations.
• Strong ability to work in a self-directed and self-motivated way.
• Commitment to sustainability as a concept and practice.
• Commitment to helping diverse students to connect classroom learning to action.
CMC Steamboat Curricular Integration

SUS - Courses identified w/strong focus on greenhouse/garden use

- Sustainable Agriculture (SUS 341)
- Foodshed Sustainability (SUS 322)
- Art and Sustainability (SUS 346): students could construct art for the site (sculpture, mosaic, murals, etc.).
- Sustainability Internship (SUS 387)
- Sustainability Capstone (SUS 489)
- Special Topics in Sustainability (SUS 375)
- Field Experiences in Sustainability (SUS 391)
- Conservation Biology (SUS 410)
CMC Steamboat Curricular Integration

SUS & BUS Internships & capstone projects

- Development of greenhouse plantings and outdoor garden space over time
  - Plant selection research, purchasing, planting, and growing
  - Site preparation (i.e. swales, building and using cold frames)
  - Marketing and/or business plans for the site, accounting regarding produce and its uses

Beekeeping courses - credit & non-credit

Permaculture Design Certificate Program & Workshops

- Credit for SUS students and certificate program students; noncredit option for community
Collaborations with other programs

- Designing and constructing: a tool shed and area seating in collaboration with engineering students, a solar food dryer & a wood-fired horno oven
- Creating works of art for the site
- Planning and installing micro-irrigation systems
- Collaborating with Culinary Management for bread baking & food preservation courses (i.e. drying, canning, pickling, and freezing)
- Field trips for Biology 111 and Astronomy 150 classes
- Space for art students to draw
- Potential offering of a botanical illustration certificate program
CMC Steamboat Curricular Integration

Culinary Management

Students will be able to learn:

- Edible gardening.
- Sustainable food production systems
- How to match up herbs and fresh greens to their names through herb and greens identification.
- How fresh herbs and greens enhance recipes.
- Harvesting and preservation principles
- Farm to table sustainable cuisine practices.
- Recycling, composting, energy conservation and local crops.

In addition the greenhouse offers the Restaurant and Culinary Management Program the ability to expand its course offerings of both credit and non-credit classes. Possible classes could include:

- Farm to Table Cuisine
- Sustainable and Bio-diverse Agricultural Production
- The Agricultural Marketing System
- Herb and Micro-Green Identification and Uses
- Edible Flowers
- Growing Principles
- Seasonal Menu Production
- Heritage seeds
Community Partnership & Outreach Ideas

- Partner with Northwest Colorado Food Coalition (NWCFC) & Culinary program for food growing education & cooking classes for low income people
- Partner with NWCFC’s community gardening program
- Support field trips for local school children to our site → benefits to long term student recruiting
- Visitor, work & learn landscape tours (perhaps for a fee once better established)
- Sustainability discussion forums
- Potlucks
- Introductory & Guest workshops
- Harvest events
- Partnerships with CO State Extension Office & master gardeners
- Seed Library collaboration with Bud Werner Memorial Library

“From a marketing standpoint the greenhouse offers not only the Restaurant and Culinary Management Program but the whole college the opportunity to enhance its image by hosting seasonal community dinners prepared with products of the garden and greenhouse.”

- Tom Smiley
Brainstorming of Site Features & Elements
Brainstorming of Site Features & Elements

Design for CSC
Stelle, IL

Overstory
Semi-dwarf Fruit Trees – Black Locust (N)

Midstory
Hazelnut – Service Berry – Dwarf Fruit Trees
Elderberry – Siberian pea shrub (N)

Understory
Gooseberry – Currants – Asparagus –
Rhubarb – Herbs – False Indigo (N)

Ground Cover
Strawberry – Nasturtium – Clovers (N)

Vines
Grapes – Winter Hardy Kiwi – Hops

In Swale
Daylilies – Comfrey

Hugelkultured Swale & Linear Food Forest
Perennial trees and plants located along the entire downhill side of the hugelkultured swales

Based on an illustration from Introduction to Permaculture by Bill Mollison
Modified by Bill Wilson of Midwest Permaculture
Greenhouse Building Types

- Hoop houses
- Domes
- Traditional greenhouses
- Earthships
Current Greenhouse Direction

• ADA accessible, permaculture-based education space
• Year-round, Mediterranean climate with a minimum indoor temp of around 40° F
• Maximized solar gain
• Minimal reliance on fossil fuels
• Smart snow shedding/roof design

• Cost Estimate: $100,000 – $250,000
• RFQ – out on March 7, 2014
Climate Battery from Start to Finish!
Potential Revenue Streams

• Permaculture Design Certification program
  – Program fees & housing revenues

• Culinary
  – Culinary Management courses

• Food Service
  – Reduced expenditures for herbs and specialty products i.e. microgreens for the Culinary program
  – Supporting the student initiative, “20% Real Food by 2020”.

“A big beneficiary of a greenhouse could be the students, faculty, and community members that patronize the CMC dining hall and ultimately a student run restaurant if the program eventually acquires one. Having the greenhouse nearby would allow for fresh, local ingredients in menu items and will significantly reduce the amount of money the school spends on fresh herbs, micro greens, lettuces, edible flowers, etc.” – Tom Smiley
Potential Revenue Streams

Sustainability Studies course/program opportunities

Community courses & programs

Produce & Product Sales
- Small CSA (community supported agriculture) program
- Sell produce/products through Yampa Valley Food Co-Op
- Preparing and selling value added products such as essential oils, jam, salsa, and bread.

Tours/Field Trips
- Offer field trips for local children which could benefit student recruiting
- Visitor tours of the site (perhaps for a fee once we’re up and running and have a lot to see).
- Seasonal community dinners with greenhouse products
Potential Grant Opportunities

• NSF-IUSE - to engage students, faculty, and community members in socially and environmentally responsive sustainability science education
  • Potential award: $2,228,104 over 5 years

• Gates Family Foundation - to support nonprofit organizations in conducting capital projects.
  • Funding may typically be used for building purchases, construction, expansion, renovation, and/or land acquisition costs.
  • The funding agency encourages projects that address root problems using substantive solutions and that demonstrate strong community support.
  • In addition, projects should incorporate green building and sustainable development practices to the greatest extent possible.
  • Award: Unspecified

• Clif Bar Family Foundation - support grassroots efforts to promote environmental protection, sustainable food and agriculture, and the reduction of environmental health hazards, as well as efforts that contribute to building stronger communities.
  • Potential award: $8,000
Potential Grant Opportunities

• Tellabs Foundation - to build the capacity of nonprofit organizations by supporting sustainable initiatives.
  • Prefers to fund specific programs rather than general operating expenses.
  • Priority funding areas are:
    • Education: supporting local and national education initiatives, with a focus on engineering, science, mathematics, and technology
    • Health: improving health through research, education, and treatment, primarily working with hospitals and health care facilities
    • Environment: encouraging understanding and protection of the environment, with a focus on environmental education, land and water protection, and waste reduction
  • Award: $10,000

• The Chichester DuPont Foundation - to support projects related to the environment, education, health care, and social services. Projects supported through this program must ensure the funding agency can play a pivotal role in its success, and preference consideration will be given to:
  • New initiatives
  • Special projects
  • The expansion of current programs
  • Capital improvements
  • Award: $100,000
Art as part of the process/cycle

- Sus Club & Art & Sus students engage in creative planning

- Creative plantings and seed bombs

- Ephemeral yearly art works in the garden that revert back to nature

Photos from http://luminerydotcom.wordpress.com/2012/06/10/andy-goldsworthy/
Outdoor Art


http://www.laboiteverte.fr/oeuvres-dans-nature-andy-goldsworthy/
Outdoor Art

Related CMC Activities

• Edwards Campus
  — Garden & Sustainable Cuisine program

• Breckenridge Campus
  — Greenhouse partnership with High Country Conservation Center
  — Summer Sustainability Institute

• Timberline Campus
  — NRS Soils Lab & Greenhouse
  — Leadville Greenhouse (in progress)
Routt County Greenhouses & Growing Facilities

- Schools:
  - Soroco High School, Oak Creek
  - Steamboat Springs Middle School
  - Lowell Whiteman Prep School

- Rocky Mountain Youth Corps

- Farms:
  - Firefly Mountain Produce
  - Elkstone Farm
  - Yampatika - organic gardens @ Legacy Ranch site
Project Status & Tentative Timeline
Project Status & Tentative Timeline

- 10/13 – 2/14: CMC Steamboat Permaculture Team meetings
- 12/13: College and Community Design Charrette
- 12/13 – 1/14: Preliminary site plan reviews & brainstorming
- 2/14: Schematic site plan & program needs completed
- 3/14: RFQ for greenhouse designer out
- 4/14: Presentation at Sustainability Conference, evaluation and selection of greenhouse designer
- Summer 2014 – Access to site constructed & greenhouse design process
- Fall/Winter 2014 – Complete greenhouse design & hire greenhouse manager
- Spring/Summer 2015 – Construct greenhouse & hire SUS faculty
Project Status & Tentative Timeline

• Greenhouse and gardens website:
  http://library.coloradomtn.edu/steamboat/permaculture
Discussion
Resources/Webliography

- [http://www.crmpi.org](http://www.crmpi.org)
- [http://permacultureprinciples.com](http://permacultureprinciples.com)
- [http://www.permaculture.org](http://www.permaculture.org)
- [http://hialtpc.org](http://hialtpc.org) (High Altitude Permaculture)
- [http://sustainableaged.org/Projects/AcademicPrograms/tabid/86/Default.aspx](http://sustainableaged.org/Projects/AcademicPrograms/tabid/86/Default.aspx)

Routt County Specific

- Elkstone Farm: [http://elkstonefarm.com](http://elkstonefarm.com)
- Lowell Whiteman Sustainable Agriculture Program: [https://sites.google.com/a/lws.edu/sap/home](https://sites.google.com/a/lws.edu/sap/home)