

WHERE EDUCATION MEETS EXPLORATION

REXAMINING VOCATIONAL EDUCATION THROUGH ENVIRONMENTAL DESIGN

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SENIOR PROJECT  
JUNE 2013





WELCOME TO  
MONTE VISTA  
"HOME OF THE MONARCH"

DONATED BY CLASSES  
1997 AND 1998

FIGURE 1

EXPLORÉ  
EXCEL  
EXCITE

THE  
L

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# TECH(X)

A TECHNICAL EDUCATION PROGRAM THAT ASSISTS STUDENTS AT MONTE VISTA HIGH SCHOOL TO EXCEL IN AND BEYOND HIGH SCHOOL

PRESENTED TO THE FACULTY OF THE LANDSCAPE ARCHITECTURE DEPARTMENT AT THE UNIVERSITY OF CALIFORNIA, DAVIS, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF BACHELORS OF SCIENCE IN LANDSCAPE ARCHITECTURE.

APPROVED AND ACCEPTED BY:

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# DEDICATION

TO TEACHERS. THANK YOU.



# ACKNOWLEDGEMENTS

## TO MOM, DAD & AMY

DESPITE EVERY LATE NIGHT SOB-FEST, YOU HAVE REMINDED ME TO STAY DRIVEN, PATIENT, AND PERSEVERE. YOU ARE SIMPLY EXTRAORDINARY.

## TO MY OTHER FAMILY, MY PEERS

YOU ALL HAVE TAKEN A PART IN CREATING A POOL OF PRICELESS MEMORIES. I RESPECT ALL OF YOUR TALENTS, AMAZING PERSONALITIES, AND WEIRD QUIRKS THAT ALWAYS SHINE THROUGH AT THE WEE HOURS OF THE MORNING. STAY EXCEPTIONAL.

## TO MY PROFESSORS

THANK YOU FOR YOUR WISE WORDS, CONSTRUCTIVE FEEDBACK, AND DANCES AT THE PROFESSIONALS DINNER. YOU HAVE MADE MY TIME AT DAVIS A WHOLESOME EXPERIENCE.

## TO MONTE VISTA HIGH SCHOOL

YOU SERVE AS AN EXEMPLARY EXAMPLE OF WHY SUPPORTING PUBLIC SCHOOLS IS IMPERATIVE, AS IT ALLOWS STUDENTS, LIKE MYSELF, TO EARN A QUALITY EDUCATION AND EXCEL TOWARDS MY MANY ASPIRATIONS.

THAN(X),  
JANA



“WHEN WE SEE LAND AS A  
COMMUNITY TO WHICH WE BELONG,  
WE MAY BEGIN TO USE IT WITH  
LOVE AND RESPECT.”

-ALDO LEOPOLD





# ABSTRACT

AS SCHOOL BUDGETS LESSEN, college becomes increasingly expensive, and teachers are instructed to teach to a test, students are disengaging from their course work and losing motivation to view school as an opportunity for career exploration. The newly introduced Environmental Design Tech(X) course, at Monte Vista High School, is a technical education program that strives to motivate high school-aged students to engage with their environment and excel in and beyond high school. The program recognizes the importance of training the leaders and workers of the future through technical skills and support. Subjects for this program center on environmental design and include design and xeriscape, plant science and horticulture, graphic arts, urban agriculture, and water management. These topics will heighten the importance of technical work and support the abilities and success of today's youth.



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JANA SCHWARTZ



## PREFACE (MY BACKGROUND)

IN HIGH SCHOOL, I was involved in clubs, sports, and enrolled in as many of the honors courses as possible. I was on the “4-year track.” However, it wasn’t until I took the ROP Drafting course, with Warren Marlay, that I discovered my passion for design and architecture, a path I would not have had the opportunity to explore otherwise. The diversity of the class and hands-on learning approach helped me develop a plan for my future career goals early on, as well as assisting me in excelling into and through college. After four years of studying Landscape Architecture at UC Davis, and having gained a tremendous amount of knowledge, I will always contribute the core of my professional beginnings to that ROP course at Monte Vista High School.

Given the opportunity to design a senior project of my choosing, I have decided to tap into the source of my professional inspiration, and offer students a wider variety of technical experiences by introducing an Environmental Design technical education program. Monte Vista High School, the school I attended, will be the model for this program.





# INTRODUCTION

MONTE VISTA | THE IDEA | THE OBJECTIVE

# MONTE VISTA HIGH SCHOOL

SPRING VALLEY, CALIFORNIA

12.6 MILES EAST OF DOWNTOWN SAN DIEGO  
20.8 MILES NORTH OF THE USA/MEXICO BORDER  
3.4 MILES WEST OF CUYAMACA COMMUNITY COLLEGE



FIGURE 3

## 1940 STUDENTS

LARGE, SUBURBAN (NON-CHARTER)

1296 ELIGIBLE FOR FREE AND  
REDUCED LUNCH

MIDDLE-LOWER INCOME

53.3% MALE 47.7% FEMALE

71% GRADUATION RATE

131 STUDENTS TOOK THE SAT IN 2009 (6.8%)

AVG. SAT 1393 = AVG. SAT AT UC DAVIS 1967

API SCORE OF 756

TEACHER/STUDENT RATIO 1:25

(MONTE VISTA SARC, REPORTARD)

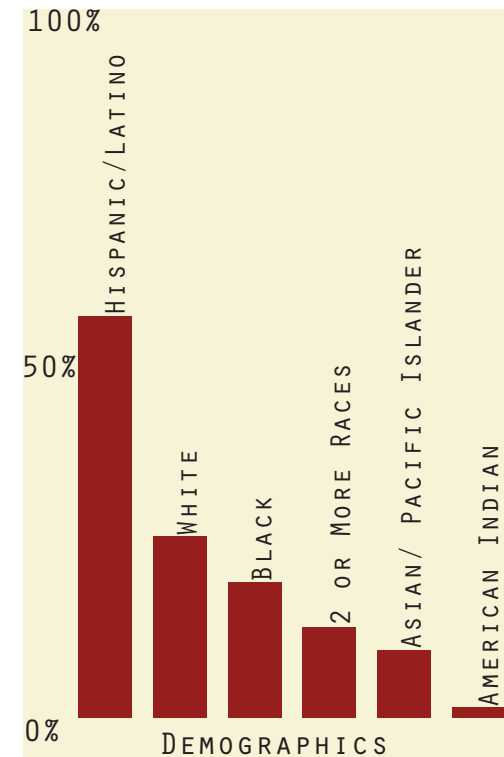


FIGURE 4



## MONTE VISTA

MONTE VISTA HIGH SCHOOL is in the Grossmont Union High School District in San Diego, California. The District consists of nine comprehensive high schools, three charter schools, one continuation high school, two alternative education sites, four special education facilities, a middle college high school program, a Regional Occupational Program (ROP) and an adult education program. Over 24,000 students attend the District's schools. Approximately 53 percent of the high school students are white and 47 percent come from Latino, African-American, Asian, Filipino, Pacific Islander, and Native American backgrounds (GUHSD, 2013).

Monte Vista is one of the schools in the district that includes a successful ROP program. Courses include ROP Drafting and Design, Automotive Technology, Manufacturing Technology, and Technology Discovery (MVHS, 2013). These courses prepare students to enter confidently into a technical career after successfully completing the coursework. At Monte Vista, after graduation, 14% of the students continue onto a 4-year college or university, 45% go onto a 2 year college eventually, and approximately 2% go directly into the military. A majority of the other students enroll into technical schools, like ITT tech, UTI, beauty school, etc (Gregg, 2013). With most students graduating and looking to enter the workforce or technical fields, the ROP courses become an essential part in preparing students for entering into more specialized careers.



FIGURE 5

## THE IDEA

EDUCATION IS AN AMAZING THING. At Monte Vista High School, there are a variety of courses offered that apply to all types of students. The arts, music, drama, film studies, and especially ROP, are departments that many public schools have not been able to preserve through budget loss. However, Monte Vista sees the value of presenting students with a diverse selection of classes to choose from, as they understand that high school is the gateway to the future of its students.

I want to embrace this philosophy at Monte Vista, and present a new course that will further support the students and their career goals, as well as one that fosters the idea that every student learns, thinks, and performs differently. With tests and technology pulling education in new directions, schools are encouraged to refocus their attention towards offering courses that celebrate alternative approaches to understanding course concepts and the context in which those concepts reside.

Monte Vista is a prime example of a school that can benefit from expanding their ROP program. Technical education is hands-on, collaborative, and allows students to apply course work to real-world projects. Vocational education allows students to begin thinking of their future career or educational goals at an earlier stage, increasing the chances of discovering a career that is better geared towards their talents and interests. In conjunction with the previously established ROP courses at Monte Vista, the introduction of an Environmental Design course will offer the opportunity for students to learn outdoors, in an environment that allows for educational exploration beyond the classroom.

“EDUCATION IS THE MOST  
POWERFUL WEAPON WHICH YOU CAN  
USE TO CHANGE THE WORLD.”

-NELSON MANDELA



# THE OBJECTIVE

Through the process of introducing an Environmental Design Technical Education course, Tech(X), students will better engage with their education and their environment, as well as eXpose themselves to the vast opportunities beyond high school.

DEFINITION: VOCATIONAL EDUCATION

“TRAINING FOR A SPECIFIC VOCATION  
IN INDUSTRY OR AGRICULTURE OR TRADE”

-WEBSTER'S DICTIONARY



# TECHNICAL EDUCATION

HISTORY | VALUE | CASE STUDIES

## THE HISTORY OF VOCATIONAL EDUCATION

IN 350 BC, in Greece and during the “First Rift,” the definition of “education” was altered due to the teachings of Aristotle and Plato. No longer was learning a physical trade considered education. Aristotle believed the people who “do” are too burdened with their hands to learn how to read or write. He believed that academics should be separate from the hand. This marks one of the first times in history that education was split into a class system, those who work and those who are educated (Smith, 1998).

In the 1800’s in the United States, industry blossomed and the learning curve changed dramatically. Entering into the industrial era, a need for skilled workers surged. An educated labor force was needed to fuel this growing industrial revolution. “Workers needed to know not only how to read and write, but how to operate the mechanical machinery of the time. Many people believed that in order for our nation to grow and survive we needed to place more emphasis on vocational education” (Goodsell, 2005).

In 1917, the Smith-Hughes Act passed and established vocational education as a federal program that was also federally funded (Camp & Crunkilton, 1985). This is one of the first examples of true national support.

In the 1940’s Technology Education became a branch of Technical Education. (Barlow, 1967). Technology Education is defined as “a study of technology, which provides an opportunity for students to learn about the processes and knowledge related to technology that are needed to solve problems and extend human capabilities” (Webster, 1993). This shows that over time, technical training is needed to keep up with the technical evolution.

Today, Vocational Education needs to continue to support the evolutionary nature of technology, the environment, and human health. Over time, focus was shifted towards earning college degrees and the emphasis of vocational education importance was muffled. However, there is a great need to support technical skill sets, “as the absence of excellence in many technical and vocational fields is also costing [the nation] economically” (Klein, 2012).



# THE VALUE OF VOCATIONAL EDUCATION

## ECONOMICALLY, SOCIALLY, MENTALLY

*“Our nation’s adolescents and young adults must be better prepared for today’s and tomorrow’s more technical jobs. We cannot afford to leave anyone behind.”*

*-George R. Boggs, President and CEO, American Society of Community Colleges*

IT IS NO SECRET that preparing today’s youth for the technical occupations of the future will support the economic well-being of their individual communities as well as the larger nation. Harvard University’s Graduate School of Education (GSE) published an article that highlights current academic and employment conditions for young adults. They highlight that “ ‘College for all’ might be the mantra, but the hard reality is that fewer than 1 in 3 young people achieve that dream (Harvard GSE, 2011). Every year, 1,000,000 students [drop out] before earning a high school degree. Many drop out because they struggle academically (Harvard GSE, 2011). This lack of completion leads to limited options for career opportunities. If a student elects to enroll in a technical education course, there is a higher chance of the student completing high school and continuing to pursue the occupation that embodies their interests. “With most Career and Technical education programs, students are acquiring skills that are relevant to the current workplace. Studies suggest that this relevance makes students feel more engaged and more likely to successfully finish their chosen education path” (Gatlin, 2011).

“Research shows that students who complete a Career or Technical Education program, even those who take a few courses without earning any type of credential or certificate, earn higher salaries than those students with a high school diploma alone. Career and Technical Education can provide students with the skills necessary to obtain high-skill and high-wage jobs” (Gatlin, 2011). This economic and social boost will support an increase in confidence levels and career satisfaction.

“THIS BIAS AGAINST VOCATIONAL EDUCATION IS DYSFUNCTIONAL.

First, it is destructive to our children. They should have the opportunity to be trained in whatever skills their natural gifts and preferences lead them to, rather than more or less condemning them to jobs they’ll find meaningless. If a young person has an affinity for hair design or one of the trades, to keep him or her from developing the skills to pursue this calling is destructive.

Second, it is destructive to our society. Many of the skills most needed to compete in the global market of the 21st century are technical skills that fall into the technical/vocational area. The absence of excellence in many technical and vocational fields is also costing us economically as a nation” (Phillips, 2012)

# CASE STUDIES

HOUSTON, TEXAS

☒AYENTA, ARIZONA

CHICAGO, ILLINOIS

BERKELEY, CALIFORNIA

AMINING OTHER  
VOC-ED PROGRAMS

## HOUSTON, TEXAS

HOUSTON PRESS | TODD SPIVAK | 2008

CHARLES MILBY HIGH was once considered a “drop out factory” where more than 40% of freshmen do not make it to their senior year. (Spivak, 2008). Today, a technical program is offered at Charles Milby with course that help prepare students for the medical field, automotive work, and an academy specifically focused around petroleum, all of which has helped combat prior school lables.

“THE FIXATION ON COLLEGE-PREP CURRICULUMS IS WHAT’S LEADING KIDS TO DROP OUT,” STATED STEVE BLOW, A COLUMNIST FOR THE DALLAS MORNING NEWS.

The vocational program has helped students complete high school, interview for jobs, and find a career path that best suits their interests. This vocational program has helped students, like Jerod Redmon, find a career path that he is excited to pursue. “Through an internship program at his school, Jerod landed a part-time job as a service adviser handling customer complaints at DeMontrond Cadillac in Conroe. He plans to continue working at the dealership while attending community college in the fall, with the long-term goal of transferring to the University of Houston for a business degree” (Spivak, 2008). It is important to emphasize that “college doesn’t just mean four-year degree; it could mean advanced training, a certificate or associate’s degree, there’s a lot of room for interpretation” said Rosena Garcia, director of career and technical education programs at the Houston ISD.

When designing the Tech(X) program, the objective of the program will be to prepare students for entering the job-field and learning technical skills that best suits their interests and talents. However, college-bound interests will still be supported and encouraged. Tech(X) helps expose students to a range of career opportunities, allowing for career exploration during and beyond high school. Today, mid-career change is a more common practice, so Tech(X) will encourage individuals to learn a variety of skills to help identify an area that an individual can succeed in and enjoy for the longevity of their career. It is a goal of Tech(X) to encourage students, by their senior year, to have made some decisions in high school on what their future career path or their career goals will be.



FIGURE 6

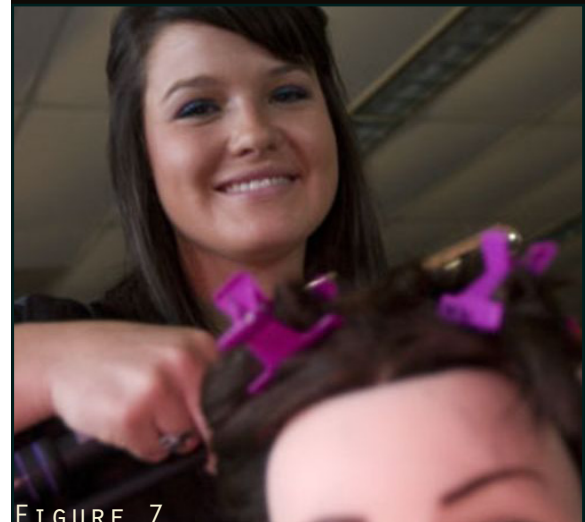


FIGURE 7



FIGURE 8



FIGURE 9



FIGURE 10



FIGURE 11

## NAAYENTA, ARIZONA

TIME MAGAZINE | JOE KLEIN | 2012

TIME MAGAZINE wrote an article about a school in Arizona on a Navajo reservation that created a veterinary vocational program, led by Clyde McBride. McBride persistently proposed a veterinary agriculture program that offers high school-aged students a unique opportunity to practice and be taught in a hands-on learning environment that also offers an “alternative way to teach [students] math, science, and reading” (Klein, May 2012). McBride explained how “high school drop out rates continue to be a national embarrassment, and most high school graduates are not prepared for the world of work.” According to the Bureau of Labor Statistics, “less than a quarter of new job openings will require a bachelor degree” (Crosby and Moncarz, Fall 2006). McBride argued, “we are not training our students for the jobs that actually exist.” The costs of maintaining vocational programs is one reason why many schools are not as enthusiastic to participate, but Tech(X) plans on making the argument that technical education is worth the financial support.

“WE ARE NOT JUST PREPARING PEOPLE TO WORK, WE ARE PREPARING PEOPLE TO BE CITIZENS.”

-JONATHAN KIMMERMAN, AN EDUCATION HISTORIAN AT NEW YORK UNIVERSITY

This quote helps illustrate that we need to provide courses that allow for students to hone in on their individual talents and technical skills while in high school and coming into adulthood.

## CHICAGO, ILLINOIS

THE CHICAGO TRIBUNE | JOEL HOOD | 2011

PATHWAYS IN TECHNOLOGY, P-TECH, is a technical course that took an alternative approach as to how their courses are structured. Five public schools in Chicago teamed up with IBM to create a six-year technical program focusing on computer technology and engineering. This program is modeled after the Pathways Program in New York. Joel Hood reported that, “incoming freshmen could be enrolled for up to six years and leave school with an associate’s degree and specialized training, with preference for entry-level jobs at IBM” (Hood, 2011).

“P-TECH IS ALREADY A HIT WITH STUDENTS AND PARENTS, WHO REALIZE TRADITIONAL SCHOOLS MAY NOT SUFFICIENTLY PREPARE STUDENTS FOR THE JOBS OF TOMORROW.”

-P-TECH’S PRINCIPAL, RASHID F. DAVIS.

According to the P-Tech website, the core principles of P-Tech include:

1. Students are expected to apply knowledge and skills in meaningful tasks within authentic contexts and given multiple opportunities to succeed.
2. Understanding big ideas in content (and in context) is central to the work of students.
3. Students can only find and make meaning when they ask questions, think at high levels, and solve problems.
4. Teachers should regularly use thought-provoking, engaging and interactive instructional strategies.
5. Students will have opportunities to revise their assignments using clear examples of successful work, known criteria, and timely feedback (P-Tech).

The program has successfully paired the school program with a respectable, and hiring corporation, and is a model worth considering. Like other studies, Rashid Davis, P-Tech’s principal, commented on how, “we all know a high school diploma is no longer enough, and [he thinks] you’ll see more people try to use this as a model in the future” (Hood, 2011). This design might not be the appropriate approach for Tech(X), but collaborating with the local community college to work towards an AA or certificate, and to work with community employers, is a notable goal for the program.



FIGURE 12



FIGURE 13



FIGURE 14



FIGURE 15

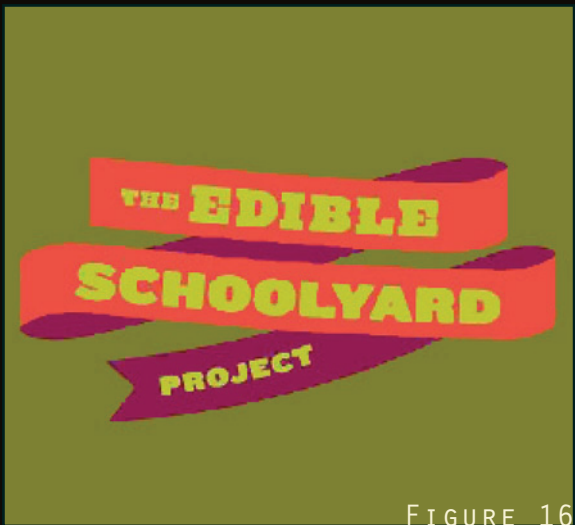


FIGURE 16



FIGURE 17

## BERKELEY, CALIFORNIA

THE EDIBLE SCHOOLYARD PROJECT | 2013

THE EDIBLE SCHOOLYARD was started by Alice Waters. She wanted to start a garden and build a teaching kitchen that could become tools for enriching the curriculum and life of the school community. The principal of Martin Luther King Jr. Middle School and Alice Waters worked with teachers and parents to get the project moving. Teachers Phoebe Tanner and Beth Sonnenberg, envisioned teaching fractions in the kitchen as a way of making math interactive, and growing heirloom grains in the garden as a way of teaching early civilizations (ESY, 2013). Recognizing the potential of the idea, Zenobia Barlow and the Center for Ecoliteracy provided funding for the Edible Schoolyard Berkeley's (ESY Berkeley) first full-time garden director, David Hawkins (ESY, 2013).

They soon hired a kitchen director to teach at the ESY, and many of the school's teachers, increasingly comfortable with hands-on learning, began generating garden and kitchen lessons linked to classroom studies. Classroom teachers began scheduling regular class time with their students in the garden and kitchen.

As the garden grew so did the program. Students cleared trees and brush to place two cisterns that collect the rainwater that irrigates the lower orchard, and built a chicken coop for their flock. In addition, "the ESY Berkeley hosts a teaching academy for educators from around the United States and the world who want to begin or further develop edible education programs in their communities" (ESY, 2013).

This study is more geared towards the style of teaching and courses that Tech(X) would offer. Financial stability, community and school support, and a clear vision are some of the main reasons this program became such a success.

## REFLECTION

PROJECTS, LIKE THOSE DESCRIBED, HELP TEACH THOSE INTERESTED IN VOCATIONAL EDUCATION, LIKE MYSELF, MAIN CRITERIA FOR ESTABLISHING AND SUSTAINING AN ENRICHMENT PROGRAM, LIKE TECH(X). THOSE BEING:

- > Program support from administration, teachers, parents, students, and the community
- > Invested partnerships, such as non-profits, community colleges, and larger corporations, can assist with funding and growth
- > Curriculum development and integration with other subjects to involve other teachers and relate concepts to practices, is a practical way of engaging students and practicing what they have learned in other courses
- > Respect for the students and their career goals, as vocational education is about enlightening and educating students about practical and applicable skill sets
- > Communicating with other programs and industries to continually improve the program and educate others on the beneficial qualities vocational education has to offer

FIGURE 18





# HOW TECH(X) WILL SUCCEED

HELIX HS | OUTDOOR EDUCATION | CUYAMACA COLLEGE | WATER CONSERVATION GARDEN

# HELIX CHARTER HIGH SCHOOL

## LEARNING FROM OTHERS OBSTACLES & EXPERIENCES



FIGURE 19

HELIX HIGH SCHOOL, also in the GUHSD, proposed a joint garden project with the city of La Mesa. The garden would serve the school and community, and act as a common meeting point for participation and interaction.

Unfortunately, despite amazing support from the La Mesa City Council, as well as from the “La Mesa Rotary Club, La Mesa Beautiful, The San Diego Master Gardeners and Helix High School parents, teachers, students and the Interact Service Club, GUHSD Superintendent Svenson recommended against approval and 3/5 of their board voted to deny a request from the City of La Mesa to lease a 6000sf unused plot of land on the Helix Charter High School campus for the establishment of a community/school garden partnership” (La Mesa Garden Network, 2013).

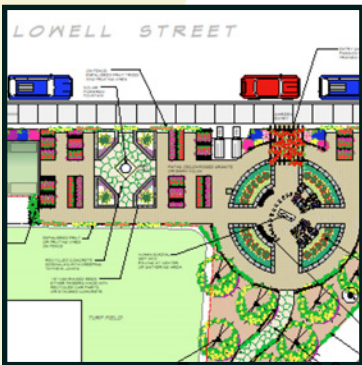


FIGURE 20

Reasons for denying the project approval, cited by Board member Jim Kelly and Superintendent Svenson, include “the risk of vandalism, the campus being overrun by homeless encampments seeking free food, destruction of a sand lot by the presence of vegetable garden, and the possibility of food poisoning from eating and sharing food grown using organic farm methods on the school campus” (La Mesa Garden Network, 2013).

“The joint-use garden had received funding from the federally funded County of San Diego “Healthy Works” Grant and the California Endowment. The Funding will now be used to develop a community garden at another site in La Mesa where the community gardeners will grow their own food and seek opportunities to provide garden education to nearby schools, youth groups and community members” (La Mesa Garden Network, 2013).



FIGURE 21

While this project seemed to have the financial and community support that was needed, without the support of the administration and thinking about risk assessment, a project will not be able to be established. Tech(X) will learn from the experiences at Helix High School, and offer solutions and reasoning that will lead to launching a successful program.

# OUTDOOR EDUCATION

## BENEFITS & OPPORTUNITIES

WHILE VALUABLE, many of the selected case studies were not directly related to technical programs centered around environmental architecture or design. However, Grant High School in Sacramento, serves as a important model for Tech(X) to learn from. Daniela Tavares is part of a team of teachers that have created and sustain an incredibly successful technical and hands-on learning environment at this Sacramento high school. “The GEO Environmental Science and Design Academy’s mission [at Grant High School] is to teach youth how to create healthy, sustainable communities. [The program] engage[s] students in unique and challenging educational opportunities that foster a sense of community and environmental stewardship. The GEO Academy offers college bound 9th-12th grade students outdoor learning and hands-on experiences in environmental horticulture, landscape architectural design, habitat restoration, “green” business, and environmental science monitoring. The academy provides strong academic training and real world based projects that deepen students’ appreciation of our environment and its natural resources. It prepares students for careers that will shape the planning of our environment and communities” (GEO academy). This is a great model program for Tech(X) to utilize in future development.

Much like Grant High School, Monte Vista is set in an urban/suburban environment, where many of the students have lost touch with what a natural, agricultural, or non-developed landscape looks like. A beneficial aspect of introducing a landscape design program is having the ability to break out from the traditional classroom setting and exposing students to the positive aspects of the outdoors. An outdoor classroom allows for students to engage with their lessons and absorb the information using all sensorial. Students are able to “experience challenge and adventure, and discover how what they learn at school relates to their life outside it and to the world around them” (Sack-Min, 2010). Outdoor learning environments also have the benefit of helping to “motivate young people, reduce poor behavior and truancy, and help raise attainment” (Sack-Min, 2010).

Creating a technical program that focuses on environmental design principles has an assortment of positive attributes. No matter the type of learner, technical education is taught in a way that can engage all types of learners and students. While placing the classroom in an outdoor setting may allow for a wider range of distractions, the tactile nature of the course helps refocus the student’s attention to the exercise of task at hand. Howard Garner, of Harvard University, explains how “individuals differ in the strengths of their intelligences” (Gardner, 1983). Creating an outdoor, hands-on, learning environment allows for a variety of learning styles to effectively absorb information. Visual-Spatial learners “think in terms of physical space and are very aware of their environments.” Bodily-kinesthetic “use the body effectively, and have a keen sense of body awareness; they like movement, making things, touching” (Gardner, 1983). Lastly, while the classroom setting is highly preferred to some students, like the Interpersonal, Linguistic, or Interpersonal style of learner, they will discover that an exterior classroom can offer the same safety and familiarity as a classroom without the feeling of confinement.



# CUYAMACA COMMUNITY COLLEGE

## FINDING PARTNERSHIP & BUILDING RELATIONSHIPS

CUYAMACA COMMUNITY COLLEGE, in San Diego, California, is the one of the community colleges in close proximity to Monte Vista High School.

The college offers a variety of disciplinary studies. One of the most relevant and useful programs that will assist the Tech(X) program at Monte Vista, is the Environmental Horticulture Department. The college has an expansive nursery and supportive faculty that would be able offer students at Monte Vista the opportunity to explore other realms of environmental science and design after, and during, high school. Having the college within miles of the high school also allows for an easier time communicating and visiting between campuses. Fortunately, because Monte Vista already has a pre-established ROP program that offers students college credit at the community college, that relationship is already established. Working with Cuyamaca College to build upon that partnership, allows for Monte Vista, it's students, and Cuyamaca College to benefit. Students will graduate from high school, continue into the community college to further their technical studies, and then decide to apply to 4-year universities or confidently enter into the workforce.

The partnership between the high school and the community college is crucial, as it allows students to envision the possibility of college or an interest-related job as a tangible option. Donald Schultz of the Horticulture Department at the community college says that “very few student come directly into the community college, especially into the horticulture department, right out of high school.” Tech(X) would expose more students to environmental-related coursework earlier on, with fieldwork understanding, and assist in increasing the enrollment of newly graduated high school students.

For Tech(X), Cuyamaca Community College would serve as one of it's leading models and partners for the program. Having that partnership would also help ensure that the program sustains itself and serves as a positive outlook for the students who participate.



FIGURE 26



FIGURE 27



FIGURE 28



24

FIGURE 29





THE WATER CONSERVATION GARDEN at Cuyamaca Community College is one of the precious resources that the community college will be able to offer the high school. This garden is a living museum for the best methods of designing a xeriscape landscape, and it has countless displays of best practice vegetation options, water management solutions, and consciously-designed spaces.

The garden is open to the public free of costs, and allows residents of the area or visitors to the garden to learn how to adopt water-conserving ideas and apply them in their personal yards.

The garden also serves as an extension of the horticulture department, as students learn about xeriscape plant types and design philosophy, while preserving the underlying emphasis on conservation.

Since located in San Diego, an area known for water shortages and prone to wildfires, having a demonstration garden that serves as a public classroom is a perfect resource to have in close proximity to the high school. The community is able to lead by example and demonstrate to the high school students that environmental awareness and activism is meaningful and important.

This garden will be included in the Tech(X) curriculum as an excellent location for field trips and field study.

FIGURE 30

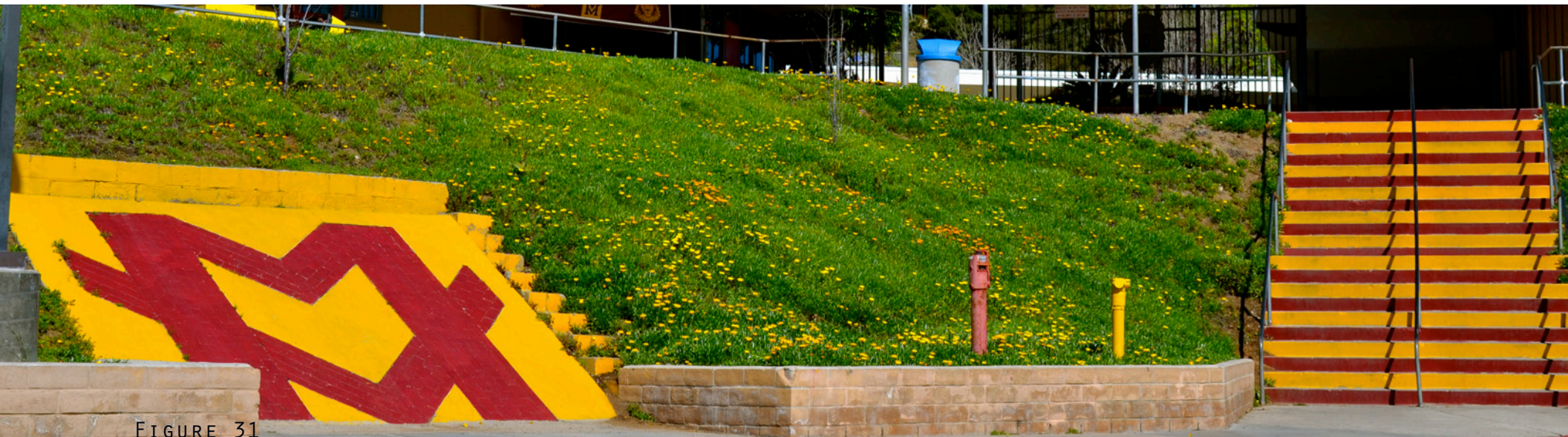


FIGURE 31





# COURSE DESCRIPTION

DETAILS | EDUCATIONAL LINKAGE | PARTNERSHIP

# TECH(X) INTRODUCES:

SITE EXPLORATION AND  
ENVIRONMENTAL DESIGN (SEED)

## COURSE DETAILS

- > TIMELINE
- > OUTLINE
- > CURRICULUM



# SEED SEMESTER 1

XERISCAPE PRINCIPLES

TRANSFERABLE TO CUYAMACA COLLEGE

APPLY GEOGRAPHY AND SAN DIEGO CONTEXT

DISCUSS WATER RESOURCES

LEARNING TO RESEARCH AND APPLY WATER  
MANAGEMENT PRACTICES

TIMELINE

# SEED SEMESTER 2

EXPLORATORY

URBAN AGRICULTURE

ART IN THE LANDSCAPE

PLANT IDENTIFICATION

INDEPENDENT PROJECT DESIGN

# SEED SEMESTER 1

## XERISCAPE | WATER CONSERVATION IN THE LANDSCAPE

THIS COURSE IS MODELED after the 2-unit Xeriscape course at Cuyamaca Community College. Upon successful completion on this course, a student will be granted high school elective credit & the college unit credit.

This course focuses on water management principles and practices as they apply to the landscape. Topics include plant selection, landscape design principles for water conservation, irrigation system selection and management, soil preparation and management and current topics and issues of California and United States water conservation efforts.

Throughout the semester, students will study a variety of subjects related to Xeriscape principles and how they are applied in the Southern California landscape. Topics include:

1. History of water delivery systems in California. Current water resources and distribution systems in California and more specifically in Southern California.
2. Landscape design principles that result in lower irrigation demand for the landscape.
3. San Diego soils and their effect on xeriscape design.
4. Use of mulch in the landscape and its effect on water demand and water use.
5. Xeriscape plant materials for San Diego county landscapes.
6. Determining plant water use.
7. Calculating MAWA and ETWU (site water use calculations required for some new landscape projects).
8. Irrigation system hardware and design styles and their appropriate uses
9. Methods for creating irrigation schedules.

A sample syllabus and course outline can be found in the appendix of the document.

# SEED SEMESTER 2

## SITE EXPLORATION | ENVIRONMENTAL CONCEPTS

THIS COURSE ALLOWS FOR STUDENTS to receive a more diverse understanding of environmental concepts. Utilizing geographic location and current environmental trends as course guidelines, this semester of SEED exposes students to best practices that can be done to best manage and care for the environment and those who occupy it.

This course focuses on sustainable and environmental practices as they apply to the landscape. Topics include urban agriculture, art in the landscape (textile, product, and color production from natural resources), horticulture, community enrichment design (walkability, bikeability), LEED and sustainable design principles, and design-and-build using recycled and reusable materials.

Throughout the semester, students will study a variety of subjects related to sustainability principles and how they are applied in the landscape. Topics include:

1. Sustainability design principles. Introducing LEED ratings and the standard for sustainable design.
2. Landscape design principles that result in lower energy and water use and more usability by walkers and bikers.
3. San Diego communities and how to engage all types of people in applying sustainable concepts in their yard and home.
4. Introduction of the practice and importance of agriculture.
5. Construction and maintenance of an agricultural plot and developing an economic profit.
6. Learning plant types, their roles in the environment, and their value to the ecosystem.
7. Utilizing plant types to make products and learning about how products are made and decompose.
8. Designing products and building products that are low-impact and fully-recycled/reused
9. Gaining student input on other environmental concepts current to the times.

MONTE VISTA HIGH SCHOOL  
SEED THROUGH TECH(X)  
OFFICIAL COURSE OUTLINE  
XERISCAPE: WATER CONSERVATION IN THE LANDSCAPE

5 hours of class time for 15 weeks | 2 units

**Course Description**

Water management principles and practices as they apply to the landscape. Topics include plant selection, landscape design principles for water conservation, irrigation system selection and management, soil preparation and management, and current topics and issues in California and United States water conservation efforts.

**Prerequisite:** None | **Corequisite:** None | **Recommended Preparation:** None

**Course Content**

- 1) Water resources in California and the United States
- 2) Xeriscape: definition, seven steps, and implementation
- 3) Plant material
- 4) Hardscapes
- 5) Water conservation strategies and implementation
- 6) Retrofitting the existing landscape
- 7) The use of effluent water in the landscape
- 8) Irrigation systems
- 9) Water sale and distribution systems
- 10) Current topics in water conservation

**Course Objectives (Expected Student Learning Outcomes)**

Students will be able to:

- 1) Evaluate plants for use in a water conserving landscape and compare and contrast the use of natives and exotics B
- 2) Integrate the seven steps of Xeriscape required in landscape water conservation and determine appropriate utilization for water conservation in new and retrofitted landscapes. A
- 3) Compare and contrast irrigation system used in typical landscapes in regards to water quality, water sources, regulations for water conservation. A
- 4) Evaluate the political and legal situation as it pertains to water sale and distribution in California and predict future impacts on landscape irrigation. B

**Method of Evaluation**

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

A. Quizzes and exams that measure the students' ability to:

- a. Evaluate irrigation systems for appropriate use with available water sources within guidelines for water conservation
- b. Demonstrate the ability to utilize appropriate principles of Xeriscape for water conservation

B. Exercises or assignments that require students to demonstrate the ability to:

- a. Analyze landscapes for appropriate use of natives and exotics in water conserving landscapes.
- b. Assess current and future potential legal, political and regulatory policies as it affects water use in the landscape.
- c. Design an appropriate water-conscious landscape on a residential property

**Special Materials Required of Student**

None

**Minimum Instructional Facilities**

Outdoor classroom and periodic use of indoor classroom facilities

**Method of Instruction**

- 1) Lecture
- 2) Films
- 3) Guest speakers
- 4) Field trips
- 5) Site visit to Water Conservation Garden at Cuyamaca College

MONTE VISTA HIGH SCHOOL  
TECH(X) VOCATIONAL EDUCATION I  
SEED SEMESTER 1:  
XERISCAPE: WATER CONSERVATION IN  
AND WATER-WISE DESIGN  
2013-2014 School Year  
Elective Credit + 2 Units of CC credit | Periods 1,2,5 |

Instructor: Jana Schwartz  
619.517.2452 cell  
[jaeschwartz@ucdavis.edu](mailto:jaeschwartz@ucdavis.edu)

Open Hours for further assistance: Period 1, 6, and after

**Catalogue Description**

Water management principles and practices as they apply to the landscape. Topics include plant selection, landscape design principles for water conservation, irrigation system selection and management, soil preparation and management, and current topics and issues in California and United States water conservation efforts.

**Course Objectives**

Attending students will study a variety of subjects applied in the Southern California landscape. Topics include:

1. History of water delivery systems in California
2. Landscape design principles and more specifically systems in California and their effect on xeriscape
3. San Diego soils and their effect on xeriscape
4. Use of mulch in the landscape and its effect
5. Xeriscape plant materials for San Diego
6. Determining plant water use.
7. Calculating MAWA and ETWU (site water projects).
8. Irrigation system hardware and design
9. Methods for creating irrigation schedules

**Textbook Information (Suggested Reading)**

Perry, Robert C. *Landscape Plants*  
Land Design Publishing

Weinstein, G. *Xeriscape Handbook*  
Fulcrum Publication

WUCOLS - California Dept. of Water Resources  
Available on-line at [www.wucols.com](http://www.wucols.com)

*Sunset Western Garden Book*

**E-Mail Addresses**

I will occasionally send email notifications.  
I will send email notification of a test email  
second week of class a test email will be sent.  
students should check to see if they received a test email.

# CURRICULUM

AT THIS POINT OF TECH(X)'S ESTABLISHMENT, a curriculum has not been created. In order to make a suitable course for the students and the school, the instructor of the course must have a comprehensive understanding of the other subjects at the Monte Vista, and a strong sense of topics of student interest. Curriculum can be phased into the creation of Tech(X), after finding a suitable instructor and establishing the framework of the outdoor classroom. The design of the outdoor classroom will help shape the direction of the coursework and rubric.

In order for the course to be most effective, having SEED meet A-G requirements will assist those interested in attending a 4-year institution complete requirements for entry. Additionally, articulating the first semester of SEED with Cuyamaca College will also allow for students to get a head start at the college, and provide an incentive to continue with their higher degree. Lastly, the course will meet California State Standards, and assist in the objective of having every student earn their high school diploma.

The curriculum should also be malleable. Working with other subjects and applying current environmental occurrences to the coursework will help keep the class interesting and applicable to everyday life. Introducing how education applies back to real-world situations is a great way of engaging students in the subject matter.

When finalized, the curriculum will expose students to exercises and lessons that are not only designed to broaden the student's knowledge, but to also educate the future workers and leaders of the nation on the importance of environmental stewardship and applications.

# EDUCATIONAL LINKAGE & PARTNERSHIPS

PARTNERSHIPS are what will keep a program, like Tech(X), sustained and successful on a long-term basis. Community and financial support are crucial for the establishment and continuation of a program. Partnerships can come in many forms, and it is important to appreciate and support those bonds already created and continually look forward and expand relationships for the better of the program and the students.

The main linkage Tech(X) will have is with the other teachers and students at Monte Vista. Other subjects are encouraged to use the outdoor classroom site outside of the three periods SEED is taught. 3 periods are open every day for teachers to sign up for classroom use. The success of the Tech(X) program depends on support from the administration, teachers, and the students. That means showing that the site is usable and beneficial for many educational purposes.

## IDEAS FOR SUPPORTING THIS IDEA INCLUDE:

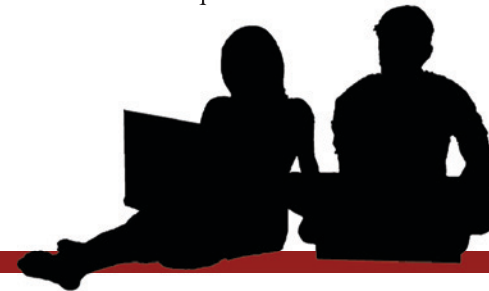
- > Suggesting books for the English course that can relate to an outdoor classroom setting. This will allow the English department to utilize the outdoor classroom to better engage students with the literature.
- > Adapting science lessons, like soil types and photosynthesis explanation, and applying the lesson outdoors, experiencing the subject matter.
- > The US History class can talk about the introduction of invasive species through immigration by discussing the importance of native vegetation.





## OTHER IMPORTANT PARTNERSHIPS INCLUDE:

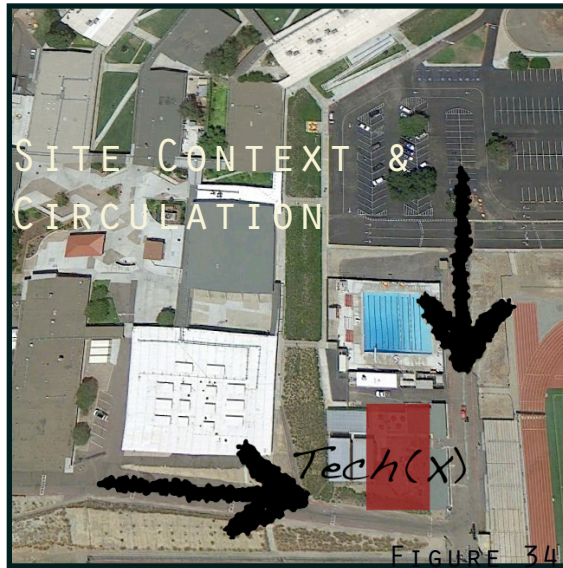
- Working with the existing **ROP** to create projects that encourage collaboration between students, teachers, and the vocational education department
- Carrying that connection onward to the **community college** allows for students to enroll in college and discover their career interests sooner. This connection also helps with the sustainability of the course, and it creates a strong relationship with a higher level school system. This relationship would help better educate the young minds of the future work force and community.
- Tech(X) also offers the opportunity to get other students involved, as young as **elementary school**. Three elementary schools are within a mile of Monte Vista, and inviting those students to tour and work with the high schoolers in the outdoor classroom would be a valuable learning opportunity for both the elementary and high school students.
- There is a great opportunity to better involve the **Green Club** on campus, as the outdoor classroom can serve as a more appropriate setting for meetings and activities.
- **Local business** can also be a valuable partnership to foster, as it will give students employment and internship opportunities before graduating, helping a student to better understand the realism of a particular career path.

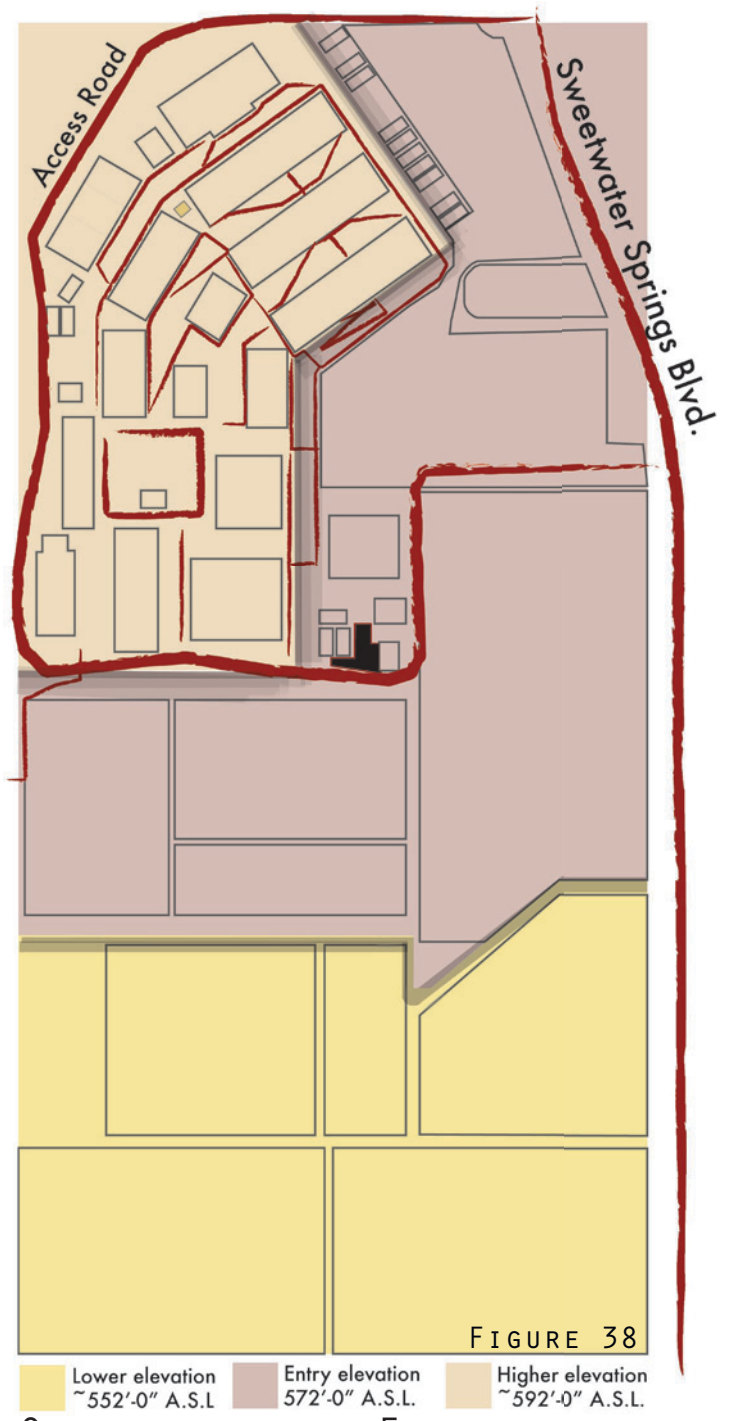
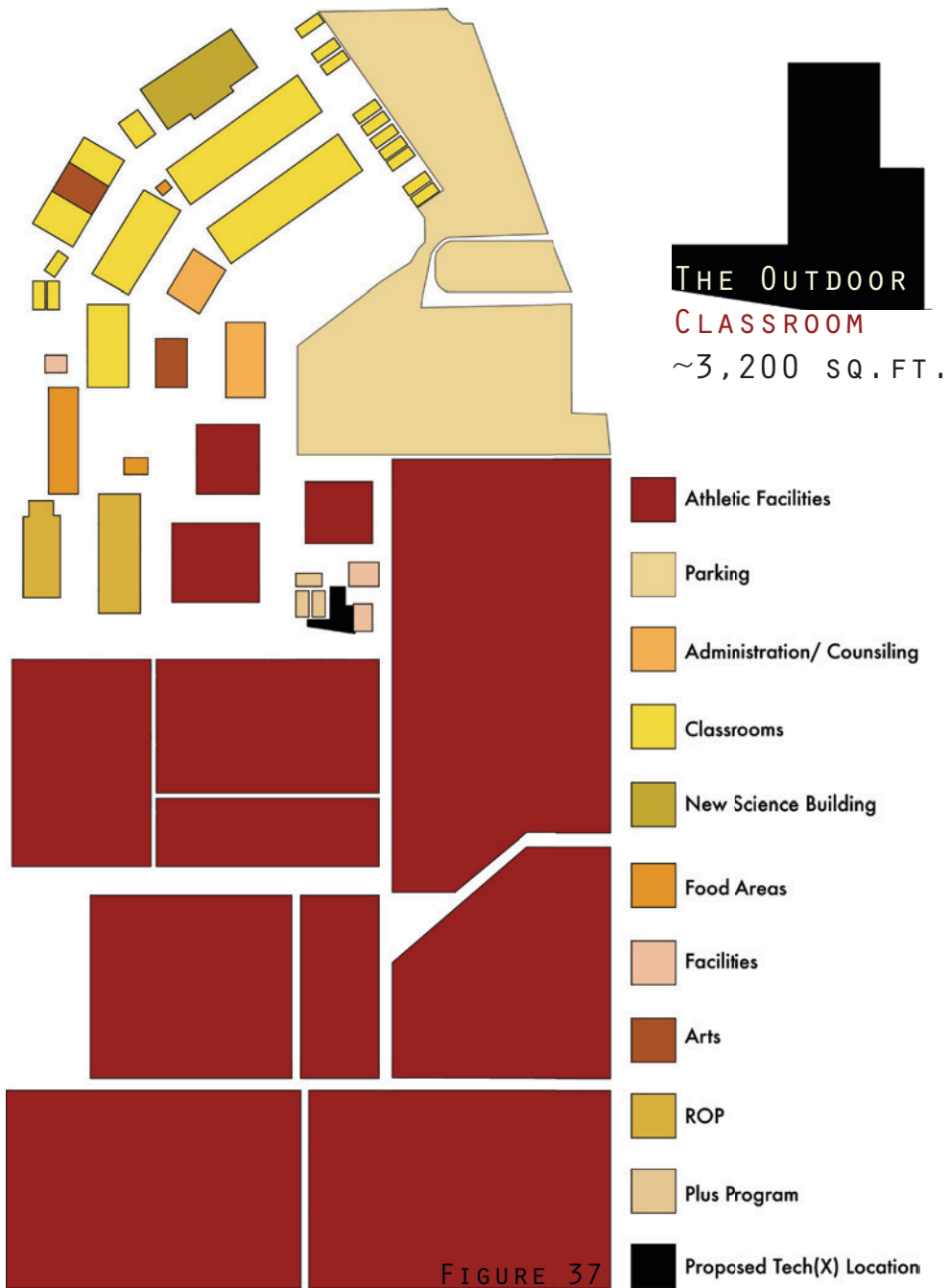


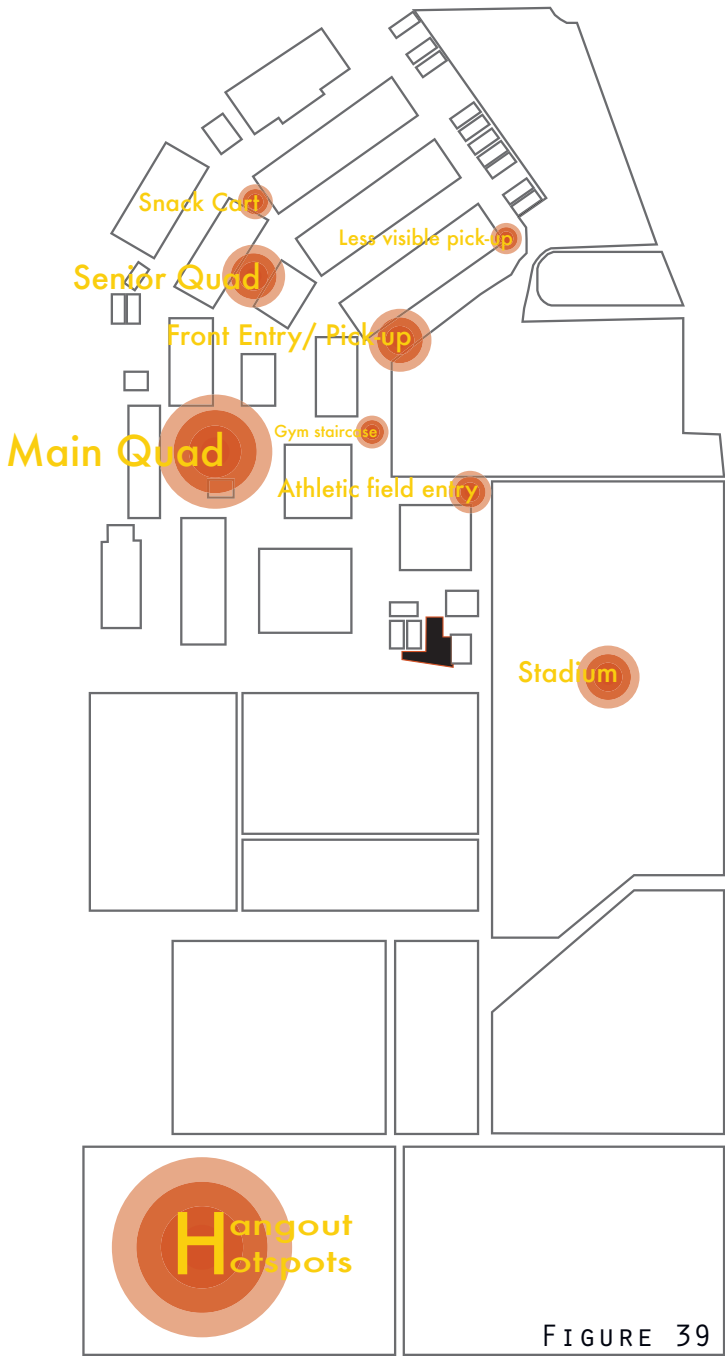


# TECH(X) SITE DESIGN

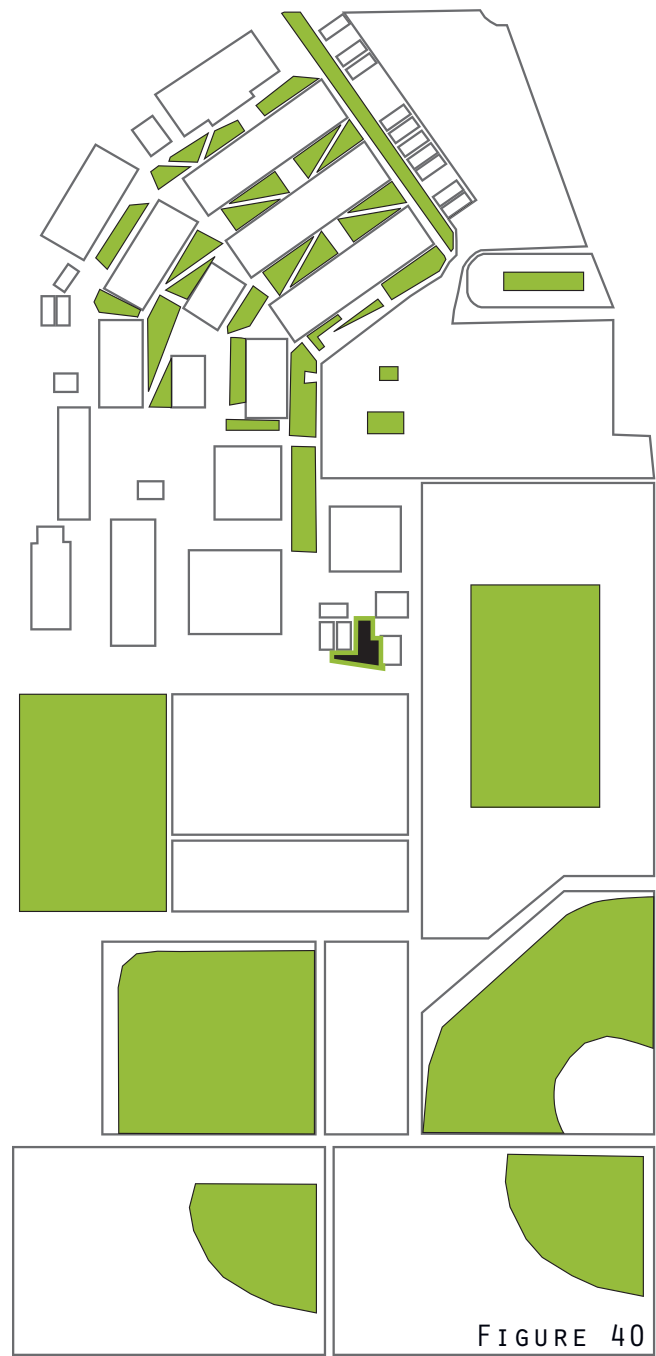
ANALYSIS | PROPOSAL | DETAILS







SOCIAL GATHERING HOT-SPOTS



PRE-EXISTING GREEN SPACE

# INTRODUCING TECH (X)

## THE OUTDOOR CLASSROOM

THE OUTDOOR CLASSROOM serves as a meeting place for students and educators to collaborate, discuss, and create. The flexibility of the site allows for lessons to be taught without limitations. Work space, construction areas, and social discussion nodes allow for interactions between students, teachers, and the environment. The outdoor classroom exposes students to the meaning of 'getting their hands dirty' and widens the student's tactile understanding of environmental principles. Associating concepts taught in the classroom to concepts in the environment will help make linkages in a student's education that may not have connected otherwise.

The Tech(X) classroom is a space where students and educators can feel safe and motivated to learn. This outdoor space will allow for students to gain a greater respect for education, the outdoors, and themselves.





# TECH(X) CLASSROOM DESIGN DETAILS

- ① Formal entry into the outdoor classroom
- ② Raised planter beds, ADA compliant
- ③ Tables for lessons and flexible use
- ④ Shade canopy
- ⑤ Walnut and wood chip ground cover
- ⑥ Car access point and event main entry
- ⑦ Water access and connection point
- ⑧ Instructor office
- ⑨ Grounds department building
- ⑩ Protected tool/storage sheds (3)
- ⑪ Rain garden with water catchment barrel
- X Perspective point of view
- ⑫ Flexible work space for student projects
- ⑬ Decomposed granite ground cover
- ⑭ Material delivery access point
- ⑮ Access road with main view into Tech(X)
- ⑯ Materials yard for project purposes
- ⑰ Greenhouse for plant propagation/lessons
- ⑱ Waste collection (compost, recycle, trash)
- ⑲ Native plantings demonstration garden
- ⑳ Flexible group gathering space
- ㉑ Plus Program





FIGURE 42

# SAMPLE SCHOOL DAY

FIGURE 43



SEED | PRUNING DEMO

PERIOD 1 7:15-8:06AM

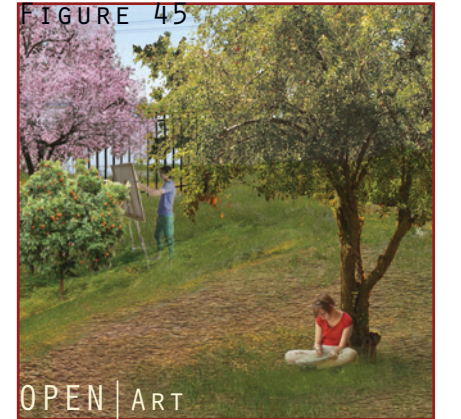
FIGURE 44



SEED | NATIVE PLANTINGS

PERIOD 2 8:11-9:02AM

FIGURE 45



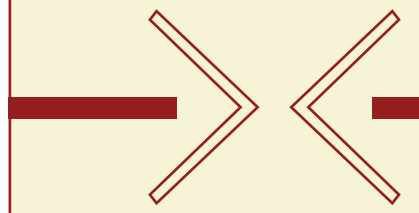
OPEN | ART

PERIOD 3 9:07-10:01AM

ADVISORY  
12:08-12:34PM


LUNCH  
12:34-1:04PM

PREP PERIOD  
-AND-  
OPEN CLASS PERIOD  
FOR OTHER SUBJECTS



PERIOD 6 1:09-2:00PM

FIGURE 48



PLUS PROGRAM | SPECIAL ED

PERIOD 7 2:05-2:56PM

# BREAK

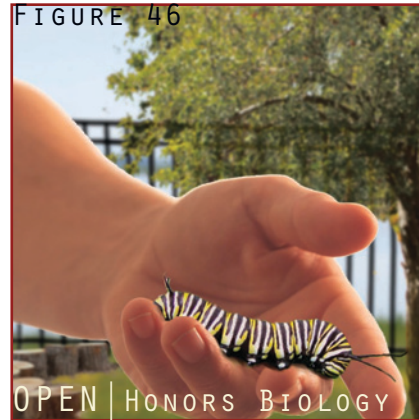


FIGURE 46

OPEN | HONORS BIOLOGY

PERIOD 4 10:16-11:07AM



FIGURE 47

SEED | DESIGN DISCUSSION

PERIOD 5 11:12-12:03PM

**THE SAMPLE SCHOOL DAY** highlights the variety of opportunities the Tech(X) outdoor classroom presents to not only students enrolled in SEED, but to all students, through the involvement of other disciplines. SEED will be taught 3 periods of the day (Periods 1,2,5), with 3 periods being marked 'OPEN' for other teachers to use for individual lessons (Periods 3,4,6). The objective of the 'OPEN' classroom is to encourage teachers to think of a way to relate a lesson to the outdoors and utilize the availability of the Tech(X) site to relate concepts back to their environmental context.

The last period of the day is reserved for the Plus Program and the Special Ed unit to utilize, allowing for site exploration beyond the classroom and valuable learning opportunities. The Tech(X) site allows for education to engage all types of learners and students. Presenting a lesson in an outdoor setting helps add variety and new interest to a topic of study. Student, teacher, and administrative involvement is the best way to involve all students and take full advantage of the opportunities outdoor education presents.

# MATERIALS & COSTS



DECOMPOSED GRANITE

13YD<sup>3</sup>

~\$1,600.<sup>00</sup>



NATIVE GROUND COVER MIX

~\$30.<sup>00</sup>/100 PLANTS  
STRONGLY DEPENDS ON  
PLANT TYPE



GRAVEL (3/8 CRUSHED ROCK)

2YD<sup>3</sup>

~\$240.<sup>00</sup>



1-GAL POTTED PLANTS

~\$15.<sup>00</sup>/PLANT  
STRONGLY DEPENDS ON  
PLANT TYPE



WALNUT/WOOD CHIP MIX

2.5YD<sup>3</sup>

~\$300.<sup>00</sup>



5-GAL TREES (6)

~\$70.<sup>00</sup>/TREE



METAL FENCING

~304 TOTAL FEET

~\$3,000.<sup>00</sup>



15-GAL TREES (5)

~\$150.<sup>00</sup>/TREE

# THE IMPORTANCE OF MATERIAL SELECTION

THE OUTDOOR CLASSROOM serves as an outdoor laboratory, art studio, and gathering space.

Most importantly, it serves as a **demonstration site** for students and visitors to experience how humans and the environment can coexist and interact. One example of how to best illustrate this interaction and demonstration is through the materials that are selected for the creation of the educational space.

## THERE ARE SEVERAL FACTORS THAT DROVE THE SELECTION OF THE MATERIAL:

- San Diego is hot and dry with little water availability and prone to wildfires
- The school does not have a substantial budget for the creation of an outdoor classroom
- Students have little exposure to many ground materials besides asphalt and concrete
- California natives are not considered as a 'typical school' vegetation type
- Colors and materials should juxtapose the beige backdrop of the main campus to attract attention and interest

The material decisions were based on cost, unique value, and concentration on local use and availability. Being arid and hot, the San Diego climate offers a unique opportunity to create a model landscape that can be replicated in other parts of campus and throughout the community. Utilizing ideas from the Water Conservation Garden at Cuyamaca College helps ensure that vegetation and material decisions are suitable for the climate and can withstand constant human interaction.

**X** A new fence is not needed for the site, but would enhance the aesthetic value of the space and can give students in the Manufacturing Technology ROP course an opportunity to be involved in the development of project.

# TECH(X) SITE EXPANSION

OVER TIME, Tech(X) will want to look forward to expanding and developing the curriculum to include more material and involve more students. The current location for the Tech(X) classroom is ideal for future expansion due to the temporary construction of the nearby classrooms. The Plus Program is currently held in these rooms, but finding classroom space for this program on the main campus, or in a permanent building, would allow for the outdoor classroom to expand its current boundaries.

With more space, a permanent classroom can be built for more dynamic lessons and activities. This space will allow for teaching to take place year-round, despite any unfortunate climate or weather scenarios. The indoor classroom will also allow for more students to be taught and rotated through different lessons within the larger Tech(X) classroom site, while offering more room and storage space during the expansion process. This buildings has the potential to be shared with the Plus Program, allowing for the department to stay in close proximity to the outdoor learning environment.

The outdoor classroom can also then include a kitchen unit, and more flexible work space. During the phasing process, the kitchen may want to be constructed in the interior classroom, but the idea of its purpose is just the same.

The kitchen and additional space would allow for the introduction of a larger agriculture unit, which includes a stronger focus on crop production, sustainable agriculture, and food science and nutrition. This addition would compliment the teaching kitchen and introduce the possibility of creating a new course as a part of Tech(X), Nutrition Science.

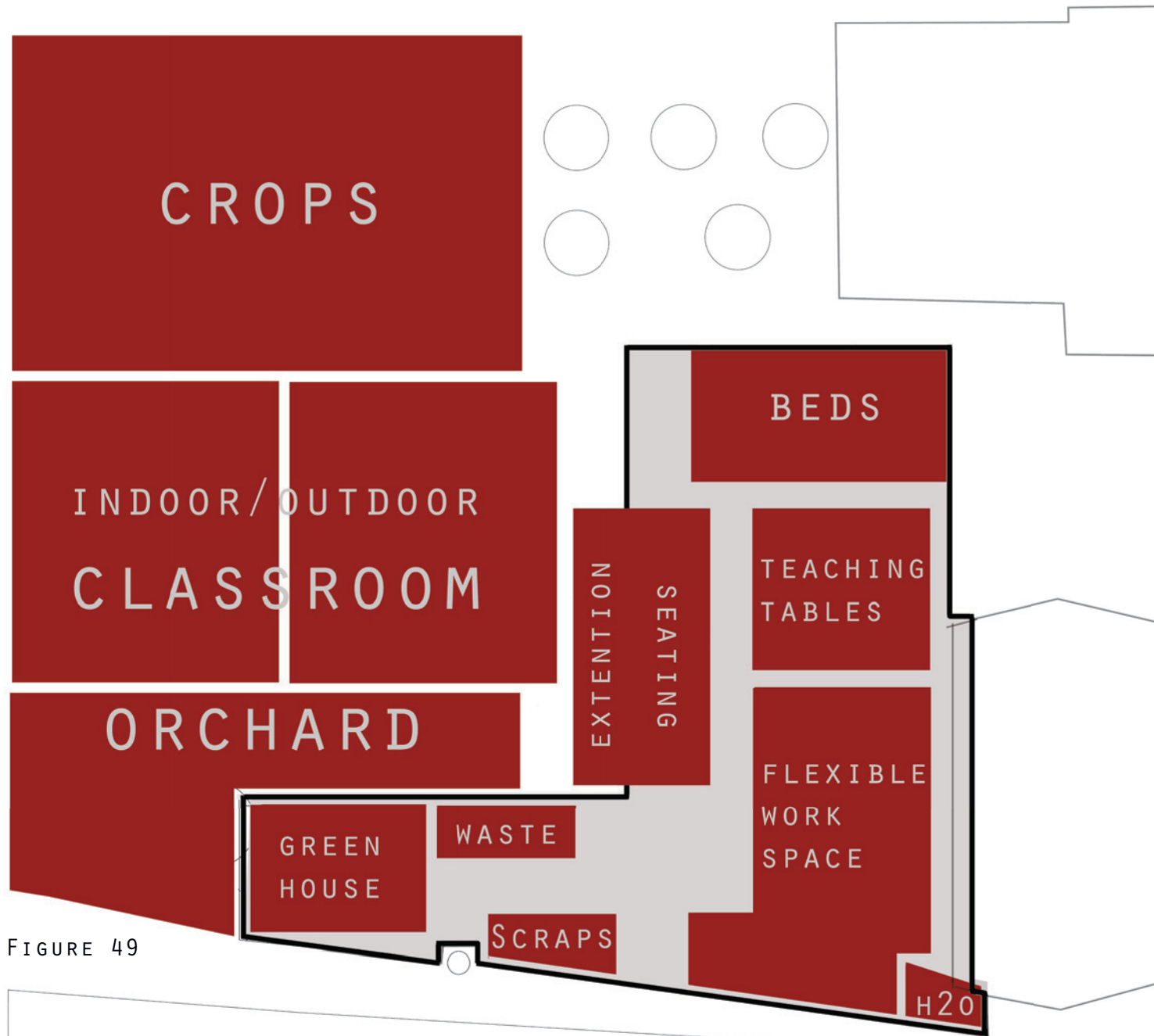


FIGURE 49

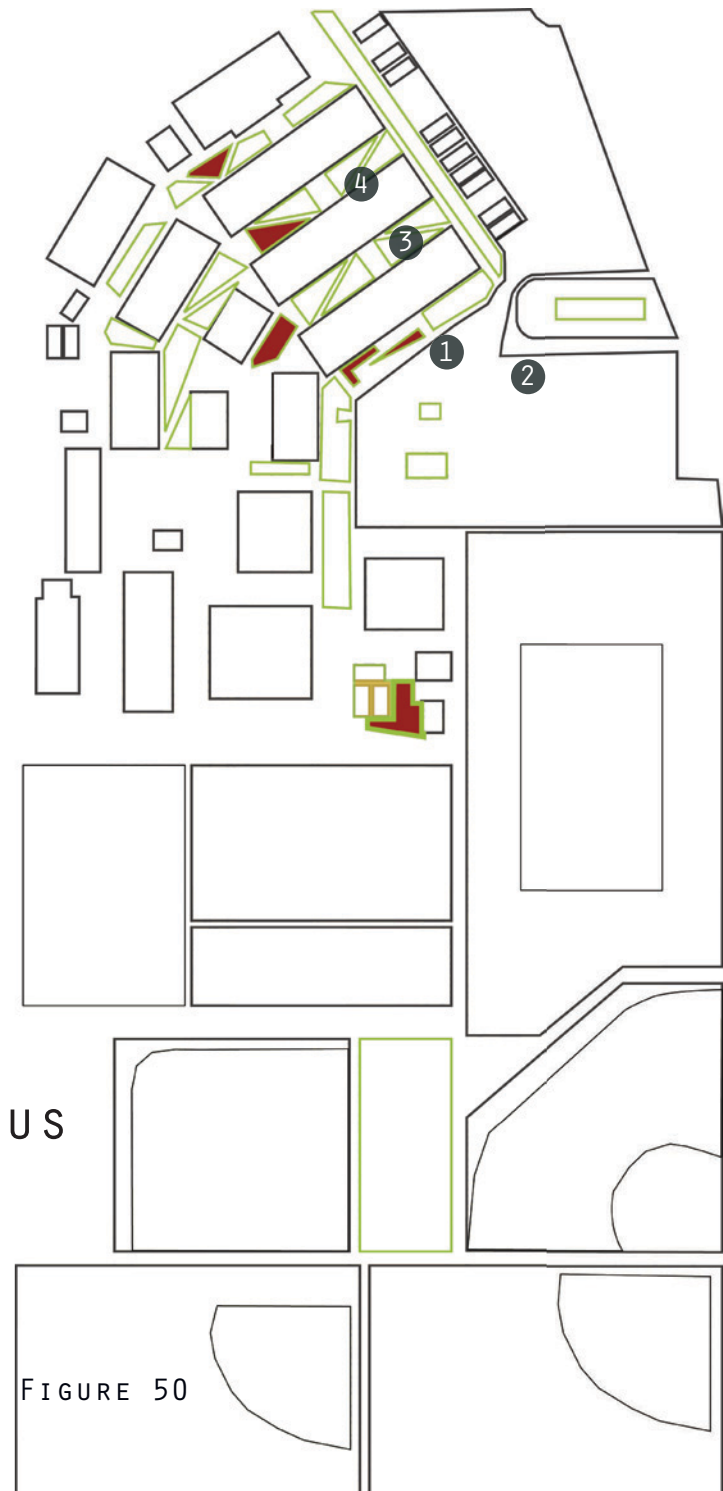
SITE EXPANSION | PORTABLE ELIMINATION

PLACING EDUCATIONAL NODES in focal parts of the main campus allows for all students to be exposed to important environmental principles.

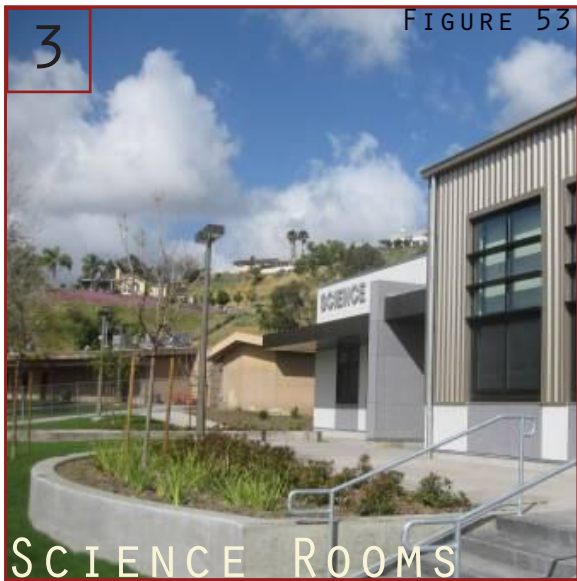
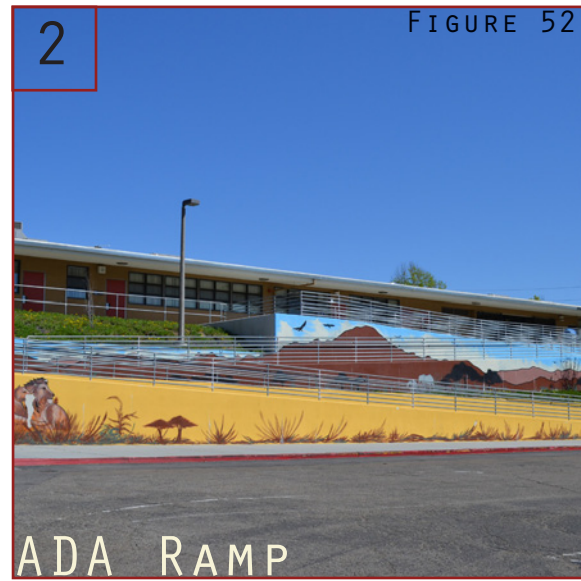
Four points were picked to highlight xeriscape principles, like water use, water management, and native vegetation selection. All four areas will have detailed descriptions of vegetation types and the purpose behind making design decisions and alterations. Introducing concepts, like a rain garden, native grasses versus standard turf grass, and appropriate watering times, are some concepts that will be implemented in various sites. Each node was picked based on high volumes student, teacher, and visitor use and best opportunity for affordable and impactful renovation.

## (X) PANSION INTO THE MAIN CAMPUS

 PHASING TECH(X) NODES INTO THE MAIN CAMPUS

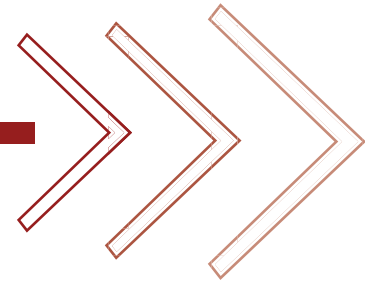






# THE NEXT STEPS

## SHOW SUPPORT



**SUPPORT** students, their talents, and their interests. Offer courses that allow students to practice their skills and gain exposure to the vast opportunities they have after high school.

**SUPPORT** educators and their thank-less efforts of assisting and shaping the young minds of the future. They are not only molding minds, but they instilling passion and drive into the leaders and workers of tomorrow.

**SUPPORT** vocational and technical education, as it allows students to learn hands-on practices that will help them excel onto further education and a best-suited career.

**SUPPORT** the environment and the many ways it enriches our everyday lives. The environment requires young minds to understand its evolving changes and dedicate time to learning and teaching sustainable practices that will support the longevity of the environment and those that occupy it.

**SUPPORT** Monte Vista and Tech(X). Tech(X) connects students to their environment, and educates students on the importance of environmental protection while applying best management practices. Monte Vista is a model school for supporting its students, their diverse backgrounds, and their many aspirations. Tech(X) can support this effort and provide unique opportunities for students to embrace their talents and pursue their interests.

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# APPENDIX

This includes a course outline and a course syllabus for the Xeriscape SEED class. This course is based off of the outline and syllabus for the Xeriscape course at Cuyamaca College to help ensure that the course will be articulated and students will receive college credit upon successful completion.

## COURSE OUTLINE SYLLABUS

**MONTE VISTA HIGH SCHOOL**  
**SEED THROUGH TECH(X)**  
**OFFICIAL COURSE OUTLINE**

**XERISCAPE: WATER CONSERVATION IN THE LANDSCAPE**

5 hours of class time for 1.5 weeks | 2 units

**Course Description**

Water management principles and practices as they apply to the landscape. Topics include plant selection, landscape design principles for water conservation, irrigation system selection and management, soil preparation and management, and current topics and issues in California and United States water conservation efforts.

**Prerequisite:** None | **Corequisite:** None | **Recommended Preparation:** None

**Course Content**

- 1) Water resources in California and the United States
- 2) Xeriscape: definition, seven steps, and implementation
- 3) Plant material
- 4) Hardscapes
- 5) Water conservation strategies and implementation
- 6) Retrofitting the existing landscape
- 7) The use of effluent water in the landscape
- 8) Irrigation systems
- 9) Water sale and distribution systems
- 10) Current topics in water conservation

**Course Objectives (Expected Student Learning Outcomes)**

Students will be able to:

- 1) Evaluate plants for use in a water conserving landscape and compare and contrast the use of natives and exotics B
- 2) Integrate the seven steps of Xeriscape required in landscape water conservation and determine appropriate utilization for water conservation in new and retrofitted landscapes. A
- 3) Compare and contrast irrigation system used in typical landscapes in regards to water quality, water sources, regulations for water conservation. A
- 4) Evaluate the political and legal situation as it pertains to water sale and distribution in California and predict future impacts on landscape irrigation. B

**Method of Evaluation**

A grading system will be established by the instructor and implemented uniformly. Grades will be based on demonstrated proficiency in subject matter determined by multiple measurements for evaluation, one of which must be essay exams, skills demonstration or, where appropriate, the symbol system.

**A. Quizzes and exams that measure the students' ability to:**

- a. Evaluate irrigation systems for appropriate use with available water sources within guidelines for water conservation
- b. Demonstrate the ability to utilize appropriate principles of Xeriscape for water conservation

**B. Exercises or assignments that require students to demonstrate the ability to:**

- a. Analyze landscapes for appropriate use of natives and exotics in water conserving landscapes.
- b. Assess current and future potential legal, political and regulatory policies as it affects water use in the landscape.
- c. Design an appropriate water-conscious landscape on a residential property

**Special Materials Required of Student**

None

**Minimum Instructional Facilities**

Outdoor classroom and periodic use of indoor classroom facilities

**Method of Instruction**

- 1) Lecture
- 2) Films
- 3) Guest speakers
- 4) Field trips
- 5) Site visit to Water Conservation Garden at Cuyamaca College

# SYLLABUS

MONTE VISTA HIGH SCHOOL  
TECH(X) VOCATIONAL EDUCATION DEPARTMENT  
SEED SEMESTER 1:  
XERISCAPE: WATER CONSERVATION IN THE LANDSCAPE  
AND WATER-WISE DESIGN STRATEGIES

2013-2014 School Year

Elective Credit + 2 Units of CC credit | Periods 1,2,5 | Tech(X) Outdoor Classroom

Instructor: Jana Schwartz

619.517.2452 cell

[jaeschwartz@ucdavis.edu](mailto:jaeschwartz@ucdavis.edu)

Open Hours for further assistance: Period 1, 6, and after 7th

## Catalogue Description

Water management principles and practices as they apply to the landscape. Topics include plant selection, landscape design principles for water conservation, irrigation system selection and management, soil preparation and management and current topics and issues of California and United States water conservation efforts.

## Course Objectives

Attending students will study a variety of subjects related to Xeriscape principles and how they are applied in the Southern California landscape. Topics include:

1. History of water delivery systems in California. Current water resources and distribution systems in California and more specifically in Southern California.
2. Landscape design principles that result in lower irrigation demand for the landscape.
3. San Diego soils and their effect on xeriscape design.
4. Use of mulch in the landscape and its effect on water demand and water use.
5. Xeriscape plant materials for San Diego county landscapes.
6. Determining plant water use.
7. Calculating MAWA and ETWU (site water use calculations required for some new landscape projects).
8. Irrigation system hardware and design styles and their appropriate uses
9. Methods for creating irrigation schedules.

## Textbook Information (Suggested Reading, Available by Instructor)

Perry, Robert C. *Landscape Plants for California Gardens*.  
Land Design Publishing. 2010

Weinstein, G. *Xeriscape Handbook: A How-To Guide to Natural Resource-Wise Gardening*.  
Fulcrum Publications, 1999.

*WUCOLS* - California Dept. of Water Resources

Available on-line at: [www.owue.water.ca.gov/docs/wucols00.pdf](http://www.owue.water.ca.gov/docs/wucols00.pdf)

*Sunset Western Garden Book* – 2007 edition

## E-Mail Addresses

I will occasionally send emails to students for reminders of assignments, tests or other information. I will send email notifications of last minute class cancellations for unforeseen reasons. After the second week of class a test email will be sent to all students. Before the class session of week 3, students should check to see if they received this test email.

# SYLLABUS CONTINUED

## Final Course Grade

Final course grades will be available through school grading portal, engrade. Students will need to access their account in order to find out their final course grade. Completion of course with a grade of 'C' or higher will result in additional 2 units of college credit.

## Google Drive

Most of the course material will be available to students through google drive. This includes the lectures, assignments and other material. A brief google drive training session will take place during the week two lecture. Students will be invited into the group on google drive upon gathering email addresses.

## Method of Instruction

1. A two hour lecture covering weekly lecture topics will be held during the class meeting. Lectures will take place Monday and Wednesdays with outdoor sessions taking place on Tuesdays and Thursdays. Fridays will remain flexible depending on current lesson, field trips, and projects.
2. Most lessons will be interactive and activity-based, but some computer generated Power Point presentations will also help illustrate lecture topics.
4. Low-water-use plants will be presented through site tours or pictures and carried throughout the quarter.

## Method of Evaluation

Scholastic performance is based the following:

1. Quizzes that include questions from topics discussed in lectures. Quiz questions will be from lecture material covered between quizzes.
2. A final exam that includes questioned selected from the quizzes.
3. A Xeriscape Plant Book
4. Attendance

- |                                    |      |
|------------------------------------|------|
| 1. Quizzes (highest 5 quiz scores) | 40 % |
| 2. Final exam                      | 25 % |
| 3. Xeriscape Plant Book            | 15 % |
| 4. Attendance                      | 20 % |

## GRADING

Grades are determined using the following scale:

|                       |            |
|-----------------------|------------|
| <b>90 – 100 %</b>     | = <b>A</b> |
| <b>80 – 89 %</b>      | = <b>B</b> |
| <b>70 – 79 %</b>      | = <b>C</b> |
| <b>60 – 69 %</b>      | = <b>D</b> |
| <b>59 % and below</b> | = <b>F</b> |

## Attendance

Attendance is an important part of this course. Full attendance at all class sessions will result in a 100% grade for the attendance portion of the final course grade (as indicated under Grading above). Students are permitted to miss 2 class periods. Missing three days will result in a 3% drop (97% total grade). Each subsequent missed day will result in a 7% attendance grade drop. (90% for four missed sessions, 83% for five missed, etc.) Late arrivals and/or early departures are subject to a partial or

# SYLLABUS CONTINUED

complete reduction. Students with doctor notes or excused reasoning must contact the instructor by 7am on the day of absence.

## Xeriscape Plant Book

Create Plant Information Sheets for 15 of the plant species that were covered in the course. The

Information Sheets must include the following:

- Each sheet must include at least two (2) photos of the plant, preferable a close-up and a distant shot. Photos can either be originals or gleaned from internet and/or books sources. (Include the photo credit). Photos can either be inserted on Plant Sheets using computer programs or hand-placed using tape or glue. Poor quality or pixilated photos can result in a lower grade.
- Plant characteristics; information must be well researched. A template will be handed out the first week of class. Students are also encouraged to make their own illustration of the plant or how the plant interacts with its environment. 2 points of extra credit will be granted towards every hand-drawn image.

The Project can be submitted either in hard-copy form or in computer-file form (Adobe Acrobat, Word, or PowerPoint formats only).

**The Xeriscape Plant Book will be graded using the following criteria: (100 points possible)**

- 75 points for a completion of all of the required information.
- 25 points for overall impression and professional appearance.

**Reports that are turned in late will be subject to a 10% penalty from one day to one week late, and a 20% or more penalty for more than one week late.**

***The Xeriscape Plant Book is due December 13, 2013***

## Policy Statements:

- 1) Instructor reserves the right to adjust course content, assignments and testing instruments
- 2) Student is responsible for all information and assignments missed due to late adds, tardiness and absences
- 3) Student is responsible for working in a safe manner, using appropriate safety aids and informing instruction of unsafe conditions
- 4) Instructor reserves the right to photograph/reproduce all work produced for this class
- 5) Instructor reserves the right to adjust all calendar dates
- 6) Student will be allowed to audit classes after speaking with the instructor and principal
- 7) This course adheres to the policies outlined for Monte Vista High School and Cuyamaca College



| DATE                   | LECTURE TOPIC - ACTIVITY - QUIZ - DUE DATES                                                                               |
|------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Sept. 3 –<br>Sept. 6   | Class information: The Syllabus, Lecture Schedule, Text, Quizzes and Exams. Overview of Course. The 7 steps of xeriscape. |
| Sept. 9 –<br>Sept. 13  | San Diego water issues.<br>San Diego County water conservation ordinances.<br>MAWA                                        |
| Sept. 16 –<br>Sept. 20 | <b>QUIZ #1</b><br>Water Conservation Ordinance<br>MAWA and ETWU                                                           |
| Sept. 23 –<br>Sept. 27 | MAWA and ETWU continued                                                                                                   |
| Sept. 30 –<br>Oct. 4   | Calculating water use in the landscape                                                                                    |
| Oct. 7 –<br>Oct. 11    | <b>QUIZ #2</b><br>San Diego soils                                                                                         |
| Oct. 14 –<br>Oct. 18   | Use of mulch and amendments                                                                                               |
| Oct. 21 –<br>Oct. 25   | <b>QUIZ #3</b><br>Southern California plant communities<br>Xeriscape plant materials                                      |
| Oct. 28 –<br>Nov. 1    | Xeriscape plant materials                                                                                                 |
| Nov. 4 –<br>Nov. 8     | <b>QUIZ #4</b><br>Xeriscape plant materials                                                                               |
| Nov. 11 –<br>Nov. 15   | Field trip to Cuyamaca Community College<br>Design practice with plant material<br>Plant type overview                    |
| Nov. 18 –<br>Nov. 22   | Xeriscape plant materials                                                                                                 |
| Nov. 25 –              |                                                                                                                           |

# SYLLABUS COURSE DESCRIPTION

| DATE                 | LECTURE TOPIC - ACTIVITY - QUIZ - DUE DATES                                                                                   |
|----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Nov. 25 –<br>Nov. 29 | <b>Thanksgiving Holiday</b>                                                                                                   |
| Dec. 2 –<br>Dec. 6   | <b>QUIZ #5</b><br>Principles of landscape irrigation                                                                          |
| Dec. 9 –<br>Dec. 13  | <b>Irrigation system types, advantages and disadvantages<br/>Relation to design</b><br><br><b>XERISCAPE PLANT BOOK IS DUE</b> |
| Dec. 16 –<br>Dec. 20 | <b>Irrigation and relation to design and water management<br/>Review for final exam</b>                                       |
| Dec. 23              | <b>Final Exam</b>                                                                                                             |

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