11 SUSTAINABILITY CURRICULUM IN THE SCHMID COLLEGE OF SCIENCE AND TECHNOLOGY AND ARGYROS SCHOOL OF BUSINESS AND ECONOMICS

Lauren H. Sato

11.1 INTRODUCTION

In 2013, students in the Environmental Science and Policy (ES&P) program at Chapman University conducted the first Chapman University Environmental Audit. It focused on various aspects of sustainability at Chapman, including building construction, curriculum, dining services, energy, landscaping, procurement, recycling, transportation, waste management, and water. However, since the original audit was conducted in 2013, several of the topics have yet to be revisited, such as curriculum.

In 2010, the Association for the Advancement of Sustainability in Higher Education (AASHE), released a publication titled “A Call to Action” which explains the importance of advancing sustainability into higher education. AASHE is comprised of colleges and universities that work together to achieve its mission: “to empower higher education to lead the sustainability transformation… by providing resources, professional development, and a network of support to enable institutions of higher education to model and advance sustainability in everything they do” (AASHE, 2010). AASHE argues that in order to meet the needs of today and of future generations, higher education institutions, such as Chapman, have a critical role for this to come to fruition. As part of its mission, Chapman claims to “emphasize the interdisciplinary study of the arts and sciences… giving both undergraduate and graduate students the opportunity to become multidimensional, original thinkers” (“About Chapman”). However, Chapman can improve on creating “multidimensional” individuals through modifications of its curriculum, such as encouraging its ten schools and colleges to work together, and by including the advancement of sustainability in the Chapman mission statement.

Environmental sustainability is an interdisciplinary field, which requires the integration of and collaboration among all other academic fields. The merger between sustainability and business, for instance, has developed into a recognized area of study because of its importance to a firm’s success (Kim, Park, & Ryu, 2015). With one of the top undergraduate business programs on the West Coast, according to Bloomberg BusinessWeek, Chapman can better its Argyros School of Business and Economics (Argyros) with the integration of sustainability (Argyros School of Business & Economics, n.d.). Through analysis of Chapman’s current and past curriculum, it is evident that there is a need for increased intersection between Chapman’s Schmid College of Science and Technology (Schmid) and Argyros. As interest and relevancy of environmental responsibility grows, opportunities arise for the Schmid and Argyros programs to collaborate.

11.1.1 Corporate Environmental Responsibility

Historically, the primary goal of corporations was to maximize profits for shareholders (Kim et al., 2015). This led to business decisions that were often made at the expense of the
environment. Natural resource depletion, pollution, and environmental degradation are examples of negative impacts that have come about from corporate activities. Within the past decade, however, corporate environmental and social responsibility has become a prominent factor in business considerations. A significant reason for this can be attributed to the increase in social media and public demand for transparency and accountability of business practices.

Today it is important for businesses, regardless of whether or not they valued the environment in the past, to incorporate sustainable methods in their daily processes to retain consumer loyalty and maintain a positive image (Senge, Smith, Kruschwitz, Laur, & Schley, 2011). Corporations continue to engage in sustainability reporting and are including environmental impact as a key performance indicator (Lydenberg, Rogers, & Wood, 2012). Google Inc. for instance, a global business, releases Environmental Reports to make clear its dedication to environmental responsibility. In its 2016 Environmental Report, Google states that it believes it is possible for large multinational corporations (MNCs) such as itself to think “in a way that makes business sense, providing economic returns alongside societal benefits and, most critically, positive environmental impacts” (Google, 2016). To take its environmental efforts even further, Google will perform all of its operations with 100% renewable energy in 2017 (Google, 2016). The IKEA Group is another example of an MNC that strives to have a positive environmental impact. IKEA also generates sustainability reports. In its Sustainability Report FY16, President and CEO of IKEA, Peter Agnefjäll, asserts that “sustainability is an integral part of our growth agenda and essential for business success” further emphasizing the importance of the intersection between environmental responsibility and business decisions (IKEA Group, 2016). Whether in the technology, furniture manufacturing, or other industry, sustainable practices have become integral factors for success. Decisions are no longer made compromising the environment for economic gain, and vice versa. As a result, businesses and organizations need and will seek employees that are innovative and educated in the interdisciplinary field of sustainability.

11.2 History of Environmental Science Program and Curriculum at Chapman

The ES&P Bachelor of Science (B.S.) degree is relatively new at Chapman. It was introduced in 2009 after the University had previously discontinued the B.S. and Bachelor of Arts degrees in Environmental Science in 2004. According to the results of the 2013 Audit, less than 25% of the student population surveyed did not learn about sustainable practices in any of their courses (Chapman University, 2013). Additionally, Chapman did not implement a Sustainability Policy until the fall of 2014, which illustrates the lack of exposure Chapman students have had to sustainability. Because sustainability is an interdisciplinary subject, it is advantageous if the two schools work together in the future to focus on “short- and long-term social, economic, and environmental impacts of decisions before acting” (Chapman Sustainability, n.d.).

Since the last curriculum audit was carried out in 2013, the ES&P program has grown. Yet, there has been little follow up on the effectiveness of the recommendations from 2013, let alone if any of them were enacted. Aside from the completion of sustainability audits during the ES&P Senior Capstone course, there are few large-scale efforts to understand environmental sustainability knowledge at Chapman. There remains a need for increased understanding of sustainability throughout the entire Chapman community. Given the upsurge in environmental recognition by companies, it would benefit Chapman to take the steps necessary to transform the culture at Chapman so that sustainability becomes an inherent part of the institution.
11.3 Current Status of Sustainability Curriculum

Data from the 2017 Environmental Audit Survey (2017 Survey) and the Chapman online syllabi database were used to determine if student and faculty exposure to sustainable practices has increased since 2013. Furthermore, the differences in environmental responsibility awareness and perspectives were explored, specifically between Schmid and Argyros. The 2017 Survey was sent out to the general student body and faculty and staff to evaluate the perceptions of the Chapman community on environmental and social responsibility and if there are varying opinions depending on the area of study or work of each survey participant. The 2017 Survey also included questions to gauge how prevalent sustainability subject matter is in the Chapman curriculum.

11.3.1 Overall Status of Sustainability in Curriculum

The 2013 Audit revealed that a significant percentage of students, overall and separated by school, had not learned about sustainability while at Chapman (Figure 11.1). Since 2013, there have been efforts to increase sustainability education at Chapman. As stated above, Chapman adopted a Sustainability Policy in 2014. Also, opportunities to be more involved with sustainability projects and organizations, such as Mission Environment, have increased. These have helped contribute to the advancement of sustainability throughout the student body.

![Figure 11.1 - Student respondents to the question: “During your time at Chapman, have you learned about sustainable practices in any of your classes?” (Chapman University, 2013)](image)

After posing the same question from the 2013 Audit in the 2017 Survey, the percentage of students that have learned about sustainability while at Chapman showed an increase compared to the 2013 results (Figure 11.2). There are significant increases among Schmid, Argyros, and Wilkinson College of Humanities and Social Sciences (Wilkinson).
Figure 11.2 - Student respondents from the 2017 Survey that answered ‘Yes’ to the question: “During your time at Chapman, have you learned about sustainable practices in any of your classes?”

Although there has been an increase in overall student learning of sustainable practices, there are still areas for much improvement, with less than 50% of students reporting having learned about sustainability.

The comparison between the 2013 and 2017 Surveys, however, are not without limitations. It is important to note that the sample sizes of the 2017 Survey are smaller than those of the 2013 Survey and may not reflect an accurate representation of the Chapman student body. Also, the breakdown of the Chapman schools differs between the two surveys, which made it challenging to carry out a direct comparison.

11.3.2 Comparison between Schmid and Argyros

To compare the curriculum in Schmid and Argyros, an extensive search was conducted of course titles and descriptions from Chapman’s course catalogs from the 2012-2013 academic year to the 2016-2017 academic year for Schmid and Argyros undergraduate programs. Similar to the 2013 Audit and to allow for comparison, the terms ‘environm’ and ‘sustainab’ were used in a data search to determine if variations of the terminology were present in the course catalog descriptions. It excluded references to the environment that were not relevant to the natural environment, such as the “learning environment”. Multiple occurrences of either ‘sustainab’ or ‘environm’ were accounted for once if these terms appeared more than one time in the content. Another student from the ES&P Senior Capstone course and author of Chapter 12 of the 2017 Audit, Hannah Francis, carried out the terminology search for the undergraduate programs in Argyros.

Despite the increase in the percentage of students who reported learning about sustainability from 2013 to 2017, the presence of related subject matter in required course descriptions does not demonstrate that. Schmid College has ten undergraduate programs: Biochemistry and Molecular Biology, Biological Sciences, Chemistry, ES&P, Computer
Information Systems (replaced by Data Analytics in Fall 2016), Mathematics, Mathematics and Civil Engineering (dual degree), Physics, and Software Engineering. It was expected that a majority of Schmid programs would require at least one course that encompassed environmental subject matter. Yet of the ten Schmid programs, only three of them, excluding the ES&P program, have required the completion of at least one course that references environmental concepts in its course description since Fall 2012 (Figure 11.3). However, as of the 2016-2017 academic year, the Molecular Biology area of study for students pursuing a degree in the Biological Sciences requires the completion of one course that covers environmental concepts.

In contrast to Schmid, there are only three Argyros undergraduate degree programs: Accounting, Business Administration, and Economics. Through analysis it was found that, although minimal, the prevalence of sustainability in the relevant courses has increased at a gradual rate since 2003 (Chapman University, 2017). However, only one of the required courses, “Principles of Microeconomics”, which is a requirement for all of the Argyros undergraduate degrees, has a course description that gives reference to the natural environment (Figure 11.3).

![Chart showing the number of courses containing the terms 'sustainab' and/or 'environm' in the course title or catalog descriptions from Fall 2012-Spring 2017 from Schmid and Argyros.]

Figure 11.3 - The number of courses containing the terms ‘sustainab’ and/or ‘environm’ in the course title or catalog descriptions from Fall 2012-Spring 2017 from Schmid and Argyros.

The absence of required courses that contain descriptions related to the natural environment in addition to the increase in students that have learned about sustainability may indicate that more elective courses are integrating sustainable ideas into course content. It may also suggest that faculty members may find sustainable concepts important or relevant enough to touch upon regardless of not being directly referenced in the course description or course title.

11.3.3 A Closer Look at Schmid College of Science and Technology

Given the low prevalence of environmental sustainability within Schmid, of which ES&P is a part of, a more in-depth analysis was conducted of Schmid undergraduate classes to observe if the course description analysis was a true representation of the sustainability curriculum in Schmid. The same term search methodology that was used to search the Schmid and Argyros course titles and descriptions was also applied to search course syllabi, ranging from Fall 2012 to
Fall 2016, to determine the frequency of environmental awareness and sustainability concepts in the undergraduate programs of Schmid.

Besides the high frequency within the ES&P program, which is expected, course material relating to sustainability was found to be uncommon in the required curriculum for the other science and technology degrees. Results from the analysis showed that, aside from ES&P, only the Chemistry required curriculum included a relatively substantial number of courses that address environmental topics. The Biochemistry, Computer Information Systems, Mathematics-Civil Engineering, and Software Engineering programs require students to take at least one course that addresses the natural environment in the course syllabus (Figure 11.4).

![Figure 11.4](image-url)

**Figure 11.4** - The number of courses containing the terms ‘sustainab’ and ‘environm’ in the syllabi of required courses for the Schmid undergraduate programs from Fall 2012- Spring 2017; excludes ES&P.

Several of the courses that do include references to the environment in the course syllabi are electives, such as Microbiology, Molecular Genetics, and Chemistry of Environmental Issues. Students, however, have the option to not take them. In addition, the numbers of courses that cover environmental concepts have shown little to no increase since 2012. This sheds light on the need for more environmental applications to the other programs even within the same field it is most related to.

It is important to note that this analysis is not without limitations. The online database has several missing syllabi and missing courses, and this analysis excludes Interterm and summer terms. Based on the trends from past semesters, estimations were made to determine the totals for academic terms with missing syllabi, such as Fall 2015 and Spring 2016. Additionally, different instructors teaching the different sections of the same course resulted in slight differences among course syllabi. In some cases, although rare, there were instances in which some syllabi contained either ‘environm’ or ‘sustain’ while other syllabi of the same course did not. In these instances, the courses were counted as sustainability curriculum if more than half of the sections’ syllabi contained the desired terms.
11.3.4 Student Attitudes Towards Sustainability in Curriculum

The number of required courses that address environmental subject matter for Schmid and Argyros students to take does not reflect the opinions of those students in regard to sustainability curriculum. From the 2017 Survey, more than 90% of Argyros and Schmid students responded that they believe teaching sustainability in higher education is at least somewhat important (Figure 11.5).

![Figure 11.5 - Student responses (n = 228) from Schmid (left), excluding ES&P students, and Argyros (right) to the question: “In your opinion, how important is it that sustainability is taught and promoted in higher education institutions such as Chapman?”](image)

Despite the low prevalence of sustainability in the cataloged curriculum in both Schmid and Argyros, the 2017 Survey data also revealed that more than 85% of students, in both Schmid and Argyros, perceive sustainability education as advantageous or having the possibility of being advantageous in the workplace (Figure 11.6).

![Figure 11.6 - Student responses (n = 228) from Schmid (left) and Argyros (right) to the question: “Do you think taking classes related to sustainability would give you an advantage in the workforce?”](image)

Comparing the course requirements and contents with the opinions of students, it is apparent that there is disconnect between what the students find important and what the required
curriculum offers. There is a need for an adaptive curriculum that reflects what students and faculty find important and relevant to prepare students for a successful future.

11.3.5 Faculty and Staff Perceptions of Sustainability in Curriculum

The content of what is taught in each course is, at least in part, determined by the willingness and expertise of the faculty. As a result, it is important to understand what faculty and staff value and feel competent enough to teach. Results from the 2017 Survey revealed that 97% of the Chapman faculty and staff believe the advancement of sustainability in higher education is at least somewhat important (Figure 11.7).

![Figure 11.7 - Faculty and staff responses (n = 108) to the question: “In your opinion, how important is it that sustainability is taught and promoted in higher education institutions such as Chapman?”](image)

Although there were not a large number of responses from either the Schmid or Argyros faculty members (n= 12) more than 80% of those who did take the survey responded that they would be willing to teach a course that integrates sustainability in the curriculum. Also, more than 90% of all faculty and staff respondents expressed interest in learning more about environmental sustainability (Figure 11.8).

![Figure 11.8 - Faculty and staff responses (n = 108) to the question: “Would you be interested in learning more about environmental sustainability?”](image)
Despite the high interest in sustainability from faculty and staff, the programs at Chapman have little integration of sustainability. There is also little push to provide faculty and staff with resources to become more sustainable. The need for more programs and workshops to address sustainable practices for faculty and staff is supported by the 2017 Survey findings.

11.3.6 Other Sustainability Initiatives in the Chapman Curriculum

Although the analysis of course syllabi and descriptions did not show a significant occurrence of environmental sustainability in the Schmid and Argyros curriculum, there are other initiatives taking place at Chapman that do promote environmental cross-sections. One such program is the Grand Challenge Initiative in which students complete six credits over two years that allow them to partake in projects that peak their interests. Grand challenges are defined as “ambitious goals on a national or global scale that capture the imagination and demand advances in innovation and breakthroughs in science and technology” (Schmid College Grand Challenges Initiative, n.d.). Some examples of challenges that Chapman students are addressing include “developing a sustainable, environmentally responsible, and intelligent transportation sector” and “building net-zero-energy housing for major markets”. This student-led approach allows students to develop leadership and communication skills with colleagues that may have different major areas of study. It also allows students to be creative and use a multidisciplinary approach to solve complex societal issues, such as environmental responsibility.

Another opportunity that the Chapman community had available is requesting funding from The Green Initiative Fund. (TGIF). Students, as well as faculty and staff, were able to submit applications for sustainability projects that reflect the TGIF goals, including being able to “demonstrate consideration of the economic, environmental, and social dimensions of sustainability” (The Green Initiative Fund, n.d.). Installation of the Big Belly Solar Trash Compactors, which are seen throughout the Chapman campus, is one such project that was funded through TGIF. Unfortunately, TGIF no longer exists and has been redistributed to Chapman’s Student Engagement department.

Sustainability Discussion Circles also provide Chapman faculty, staff, and students with a platform to discuss topics related to sustainability, as well as topics on peace and justice. These discussions take place once a week over a six-week period and last an hour. The Discussion Circles are meant to engage Chapman individuals in thought-provoking dialogue on how to create change in the world (Sustainability Discussion Circles, n.d.).

11.3.7 Best Practices at Other Institutions

One way in which Chapman can begin to better integrate sustainability into its curriculum is by looking at what Chapman’s peer and aspirational schools have done. Although not every program may be successful, or be suitable to incorporate at Chapman, observing what other institutions have done can give Chapman ideas on what it could implement. For instance, Claremont McKenna College (CMC), one of Chapman’s peer schools, currently has an Environmental Analysis program to prepare students for entering a career field in which knowledge of sustainable development is beneficial, if not required (Environmental Analysis Major, n.d.). Additionally, CMC has created a Sustainability Fund in which students can submit Request for Proposals to receive grants that fund student-led projects that focus on the
enhancement of environmental sustainability at CMC. This not only encourages students to be creative, it also reflects the school’s belief that being sustainable can create beneficial returns on investment.

Another peer school of Chapman, Gonzaga University, also dedicates campus resources to enhance sustainability at the school. In 2015, the Caltado Project was approved, which consists of workshops and providing resources for faculty to assist them with incorporating sustainability into the curriculum (The Caltado Project, n.d.). This program provides faculty with education about the environment, which equips them with the knowledge and skills to modify their course curriculum so that it incorporates concepts of sustainability.

Although not a peer school of Chapman, Colorado State University (CSU) is a leader in sustainable college campuses and can serve as an aspirational school of Chapman for its sustainability curriculum. CSU has several initiatives in place that Chapman can use as a framework or guide to better incorporate sustainability into its curriculum. Currently, CSU offers 962 courses related to sustainability. Some courses that they offer that Chapman could also adopt for both science and business majors include ‘Accounting for Global Sustainable Enterprise’, ‘Corporate Culture-Socially Responsible Apparel’, and ‘Sustainable Enterprise Fund and Evaluation’ (Sustainability Majors & Courses, n.d.). CSU achieved a Platinum STARS score in 2015, the first institution to have done so. To continue their progress in sustainability efforts, CSU created a Sustainability Strategic Plan to keep track of goals, targets, and areas in need of improvements.

11.4 Concluding Assessment

11.4.1 Areas Where Chapman is Doing Well
- The adoption of a Sustainability Policy in 2014 is a start for advancing sustainable practices throughout the Chapman campus.
- Participation in the U.S. Department of Energy Solar Decathlon in 2015 allowed students to compete in an international competition to build and design an affordable net-zero-energy home, which highlighted the cross-section of environmental concepts and economics.
- Conducting Environmental Audits of various departments and operations at Chapman provides a way to analyze where the campus can make improvements towards becoming more sustainable.
- Chapman has available internship opportunities, such as the Green Panther intern, in which students can communicate with the Chapman campus about green events and practices.

11.4.2 Areas in which to Improve
- The current Sustainability page on the Chapman website is outdated and needs an upgrade.
- Increase in experimental courses, such as Corporate Sustainability Management, would allow for more interdisciplinary education.
- Green Department Certification allows departments on Chapman to commit to sustainable practices, such as using less paper, but participation in program is lacking.
- Chapman’s mission statement could be enhanced through the addition of a sustainability or environmental responsibility component.
- Communication among the different schools is lacking. It is evident that the various schools within Chapman are segregated and have little intersection, even among relevant programs.
- The general education requirement should include a sustainability learning objective.
- Chapman’s STARS participation needs to be updated and can be more thorough. It is currently expired.

11.4.3 Existing Gaps in Knowledge
- Looking across all programs and schools, as well as the graduate schools, at Chapman would give a more holistic picture of how multiple disciplines can intertwine to address environmental responsibility.
- Lack of data availability and documentation makes it challenging to assess accurately the curriculum.
- Assess the various interests of faculty and staff relating to sustainability and identify existing challenges that make it difficult to teach sustainability subject matter.
- There are several inconsistencies among the various Chapman schools and curriculum. It may prove beneficial to assess the barriers preventing better cross-campus communication and collaboration.

11.5 Recommendations

11.5.1 Low Cost/Effort
- Increase advertisement of the Grand Challenges Initiative and boost encouragement for students to participate
- Improve Chapman’s Sustainability webpage by referencing peer institutions as examples
- Place more emphasis on recognizing departments that become Green Department Certified to initiate momentum and eagerness to participate in the program
- Add a sustainability component into Chapman’s mission statement
- Publicize more the courses that address sustainable practices to the entire Chapman student body

11.5.2 Moderate Cost/Effort
- Require and/or incentivize faculty and staff to attend sustainability workshops and events
- Educate trustees and the rest of the campus community and solicit their support with sustainable development initiatives and projects
- Reach out to and engage with external community; educate them on the importance of environmental sustainability to develop better public understanding and awareness
- Establish sustainability standards and goals to keep Chapman accountable and on track with those goals
- Allow the Sustainability Committee, or other organized body, to enforce limitations and implement guidelines on resource use for faculty and staff to adhere to
- Develop a living database to document progress, areas in need of improvement, and what Chapman is doing well in
- Bring together campus leadership with business and community leaders to seek collaboration and funding for more sustainability projects
- Participate in STARS and hire a team of students, faculty, and staff to submit required documents
Provide more cross-listed, or experimental courses, that intertwine sustainability and various other areas of study

11.5.3 High Cost/Effort

- Organize campus events to improve communication among the various programs and schools
  - Incentivize students and faculty to suggest recommendations and find opportunities to incorporate curriculum in each major that connects sustainability with that particular area of study
- Restart the Green Initiatives Fund to allow students and faculty to engage in sustainable projects and require a return on investment component, similar to CMC’s Sustainability Fund
- Fund attendance to conferences, such as the AASHE Conference and Expo
- Host mixers for all departments on campus to attend that initiates and encourages collaboration and improves cross-campus communication
- Create programs with other schools, such as one that would allow students to take courses at other campuses
- Participate in policy making processes that promote environmental sustainability in higher education curriculum
- Develop an in-depth Sustainability Strategic Plan that addresses short term and long term goals

11.5.4 Future Areas of Research

It will be critical to monitor progress and changes as Chapman moves towards a more sustainable campus. Overall, the University will need to adopt a more holistic approach to Chapman operations by balancing “sustainable development, environmental management and social responsibility” to influence the decision-making process, curriculum, campus activities, community engagement, and research (Filho, Shiel, & do Paco, 2015). As part of transforming the culture at Chapman, it will be essential to demonstrate sustainability as an enhancement, rather than a cost. Chapman can invest in or better allocate funds to finance sustainability projects for both students and faculty to validate that sustainable approaches can be economical in the long-term and promote environmental management. The results from the 2017 Survey suggest that student and faculty and staff would be supportive of a mission statement that is aligned with a future in sustainability. Establishing programs that aim to advance a vision of sustainability is important to transform Chapman’s organizational culture.

11.6 Contacts

Mackenzie Crigger, Sustainability Manager, Chapman University crigger@chapman.edu
Cheryl Stack, Administrative Assistant, Hashinger Science Center sctack@chapman.edu

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12 SUSTAINABILITY CURRICULUM IN THE ARGYROS SCHOOL OF BUSINESS AND ECONOMICS

Hannah J. Francis

12.1 INTRODUCTION

Sustainability is a subject that can successfully merge environmental and earth sciences with business and economics. Increasingly, businesses in every industry are incorporating sustainability into their goals for the future showing that sustainability is becoming a corporate priority. For-profit business is extremely influential in society and therefore has the ability to make large scale positive impacts on the environment. However, sustainability initiatives can also provide companies with competitive advantage. The Necessary Revolution (Senge, Smith, & Krushwitz, 2008), makes the case that successful businesses of the future will be those that incorporate customers’ and employees’ personal values. People want to work for a company that contributes to society. The authors give seven concrete reasons why a company should incorporate sustainability into their values and goals:

1. There is significant money to be saved.
2. There is significant money to be made.
3. You can provide your customers with a competitive edge.
4. Sustainability is a point of differentiation.
5. You can shape the future of your industry.
6. You can become a preferred supplier.
7. You can change your image and brand.

An analysis of the undergraduate curricular requirements in the Argyros School of Business and Economics was done as part of the Chapman University 2017 Environmental Audit, to assess the incorporation of sustainability related topics. The Argyros School of Business and Economics at Chapman University prides itself on its high national rankings and practice-based business education that it offers its students. The mission statement says, “The George L. Argyros School of Business and Economics develops business leaders who create value for their organizations by blending sound economic reasoning and a global perspective with the qualities of individual initiative, analytical skill, accountability, effective communication, and integrity.” Although the topic of sustainability is not directly mentioned in this statement, it can be applied within the phrases global perspective, accountability, analytical skill and integrity.
12.2 History of Sustainability Curriculum in the Argyros School of Business and Economics

12.2.1 Overview of Sustainability Curriculum in the Argyros School of Business and Economics

The school offers both undergraduate and graduate degree programs. The undergraduate school offers a Bachelor of Science in Accounting, Business Administration, and Economics. In addition to the degree programs, the Argyros School operates centers that aim to bring the outside business world to the school and its students. These centers include the A. Gary Anderson Center for Economic Research, the C. Larry Hoag Center for Real Estate and Finance, the Ralph W. Leatherby Center for Entrepreneurship and Business Ethics, and the Walter Schmid Center for International Business. When first considering the degree programs and resources offered for students at the Argyros School, it was difficult to find much connection to the topic of environmental sustainability. A deeper look at the curricular requirements that pertain to sustainability within the undergraduate degree programs revealed current connections to sustainability and potential areas for growth.

12.2.1.a Program Learning Outcomes

Each degree program on campus has a set of Program Learning Outcomes. These are “student abilities that are not only related to Chapman’s institutional mission and goals, but also unique to the student’s discipline or field of study” (Chapman University). Faculty of each degree program measure student attainment of Program Learning Outcomes on an annual basis. In addition, a Program Review is done every five to seven years in which external experts along with faculty review education effectiveness. Annual assessments as well has Program Review use various forms of data to evaluate program effectiveness. This includes data collected from courses such as exam questions, oral communication evaluations, or written assessments. The Program Learning Outcomes rarely change, but may change during Program Review. Faculty approval would be needed in order to change any Program Learning Outcomes.

The current Program Learning Outcomes for the Business Administration and Economics programs are similar, while the Accounting program does not contain the Global Professional Learning Outcome (Table 12.1).

Table 12.1 - Current Program Learning Outcomes for each degree program within the Argyros School.

<table>
<thead>
<tr>
<th>Business Administration</th>
<th>Economics</th>
<th>Accounting</th>
</tr>
</thead>
</table>

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12.2.1.b Descriptions of Program Learning Outcomes

- **Knowledge of Business** - Each student will be able to define terminology, describe theories, and apply models to address issues in accounting, economics, finance, management, marketing and operations.

- **Knowledge of Economics** - Each student will demonstrate knowledge of modern microeconomic and macroeconomic theories and apply these theories to analyze economic policies and problems.

- **Knowledge of Accounting** - Each student will be able to apply statutory, professional and ethical standards to solve accounting and tax problems.

- **Problem Solving Skill** - Each student will possess the quantitative and technical skills to analyze data and interpret results to improve business performance.

- **Communication** - Each student will be able to communicate clearly, concisely and professionally.

- **Global Professional** - Each student will demonstrate awareness of ethical, cultural and professional perspectives of the global economic environment.

12.2.2 History Courses Directed Related to Sustainability

In order to evaluate the number of courses related to sustainability and/or the natural environment, the terms ‘environm’ and ‘sustainab’ were searched in course titles and descriptions within the Argyros school from Catalog year 2003/2004 until yes 2016/2017. Analysis excluded instances that did not relate to the natural environment; for example, a course description that described a business environment. The analysis also excluded instances in which the search terms came up multiple times within one course.

The number of courses directly related to sustainability or the environment has doubled since Catalog year 2003/2004 (Figure 12.1). However, no courses included the term ‘sustainab’ until catalog year of 2016/2017. This was an experimental course titled Corporate Sustainability Management, taught by Professor Mackenzie Crigger.

![Figure 12.1](image)

**Figure 12.1** - The number of courses within the Argyros School of Business and Economics (undergraduate) from Catalog year 2003/2004 to 2016/2017 that contain the search phrase ‘environm’ or ‘sustainab’ in the course description or title.
12.3 Current Status of Sustainability Curriculum in the Argyros School of Business and Economics

12.3.1 Overview of Current Courses Directly Related to Sustainability

There are currently six courses within the Argyros School degree programs that are directly related to sustainability, meaning they include either the term ‘environm’ or ‘sustainab’ in their course description or title. Through the search analysis, it was also found that most of the related courses are offered as electives, meaning a limited number of students are exposed to them. Historically, there has only been one required course involving sustainability, Principles of Microeconomics. This course is required among all majors in the Argyros School. The Business Administration degree program contains four related elective courses, the Economics program contains one course, and the Accounting does not have any related elective courses (Table 12.2).

Table 12.2 - The courses that contain the term ‘environm’ or ‘sustainab’ in their course names or descriptions categorized by required and elective course and by department for Catalog year 2016/2017.

<table>
<thead>
<tr>
<th>Department</th>
<th>Number of Required Courses</th>
<th>Number of Elective Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Administration</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Economics</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Accounting</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
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12.3.1.a ECON 200 Principles of Microeconomics

Course description: Decision-making with scarce resources, supply and demand concepts, pricing in competitive and non-competitive markets, capital theory, resource pricing, public choice, environmental economics, international trade, and comparative economic systems. (Offered every semester.) 3 credits.

This course is the only class involving sustainability that is taken by students in all departments within the Argyros School undergraduate program. It is offered every semester and taught by between five and six faculty members. Within current course syllabi for Principles of Microeconomics courses offered, the term ‘environm’ does not show up other than repeated in the course description. However, relevant topics that are present include externalities and Tragedy of the Commons.

Interviews with current professors of the course revealed that all courses incorporate topics of sustainability a little differently. All professors include the major themes of externalities, which falls under the larger topic of Market Failure, and Tragedy of the Commons, which deals with the use of public goods. Negative externalities occur when individual actors do not internalize the full cost of an activity. Air pollution is an example of externalities that is referred to in the Principles of Microeconomics course. Tom Campbell additionally includes a discussion
about if cap and trade or a tax is better in regulating pollution. Imposing a tax on production of carbon is preferable because it incentivizes new technology.

As the only related required course, it is important that it communicates to future business leaders an introduction on the importance of accounting for ecosystem services within businesses or corporations. However, as a principle course it only covers these topics of environmental economics at a very introductory level. On average, professors said they spent no more than two course periods on the topic, and felt that this was adequate time spent as an introduction to this section of Principles of Microeconomics. This could indicate a lack of additional directly related required courses.

12.3.1.b ECON 465 Environmental and Natural Resources Economics

Course description: Theories of environmental and natural resource economics will be examined both for allocative efficiency and for impacts on growth. The theory of public choice and the theory of market failure will be studied. Theory will be applied to renewable and nonrenewable resources and to pollution of air, water, and land. (Offered as needed.) 3 credits.

The Environmental and Natural Resources Economics course is the only course that directly mentions the environment in the title. Currently, the course is taught by Professor Ross A. Mohr and offered once a year. The major contents of the course include a model of nonrenewable resource use, valuation of the economy, estimating benefits, cost benefit analysis, and theory of environmental agreements. It is cross-listed with the Environmental Science and Policy (ES&P) degree program, offered as an elective in the Policy track. According to Professor Mohr, the course focuses more on theories than it does on policy. Therefore, it would be beneficial to add a separate course on environmental economic policy. This course would be an ideal merger between the ES&P degree program, and would allow for the Environmental and Natural Resources and Economics course to include more in depth economic theories and analysis.

12.3.1.c REAL 436 Real Estate Development

Course description: This course is designed to provide an overview of the real estate development process with an emphasis on the economic, environmental, institutional, regulatory, and social contexts. Topics discussed include market analysis, site acquisition, due diligence, zoning, entitlements, approvals, site planning, building design, construction, financing, leasing, and ongoing management and disposition. Value creation and risk identification and management will be important elements of the course. (Offered as needed.) 3 credits.

According to the course syllabi, this course covers relevant topics such as the California Environmental Quality Act (CEQA) and transportation issues. This course is an elective for Business Administration students and is typically offered once a year, limiting the number of students in the Argyros School that are exposed to these topics.
12.3.1.d ENV 301 Environmental Geology

Course description: A study of the environmental implications of geological processes as they relate to human interaction. Topics include natural disasters, water issues, mineral and energy resources, and metal contamination. Lecture and optional weekend field trips. (Offered spring semester, alternate years.) 3 credits.

This is a cross-listed course within the Environmental Science and Policy program offered to Business Administration students. A prerequisite requirement of this course is ENV 111 (Physical Geology) or ENV 112 (Introduction to Hazards and Global Environmental Change). Since this course is offered within the ES&P program only in alternating years and has prerequisite requirements, a very limited number of students within the Argyros School are exposed.

12.3.1.e ENV/BUS 329 Corporate Sustainability Management

The course description: Managers, now more than ever, play a key role in advancing corporate sustainability by integrating conservation, increasing efficiency and championing strategic operational changes in their organizations in order to manage risk and drive profitability. Traditional business functions – strategic integration, risk management, change management, supply chains, communication, reporting and profitability- raid familiar management concerns and questions that will be covered in this course via the lens of sustainability.

Corporate Sustainability Management is an experimental course that was cross-listed between the ES&P and Business Administration degree programs. It was offered for the first time Fall semester 2016 and was the first course offered within the Argyros School that contains the term ‘sustainability’ in the course description/title. This course represents a move toward more interdisciplinary courses and offers a unique merge of perspectives from both Business Administration and ES&P students.

12.3.2 Other Courses Indirectly Related to Sustainability

The above courses within the Argyros School include topics of sustainability as integral aspects of the course or within their course description, but sustainability has also found itself within other courses. A list of other courses found to have included relevant topics is below. This information was found through surveying students, course syllabi data, and interviews with professors. Since sustainability or the environment is not directly mentioned in the course description, it is likely covered with much more inconsistency among these courses. For example, Professor Mario Leone includes discussion of sustainability within students’ final projects in the Business Capstone course. On the other hand, Professor Scott Browne does not include topics of sustainability in the Business Capstone course. In addition, sustainability is mentioned in one syllabus for the course, Introduction to Information Systems, but not in the other syllabi of the same course.
Table 12.3 - Courses indirectly related to sustainability found via course syllabi, student survey answers, and interviews with professors.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Degree Program</th>
<th>Required or Not Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bus 216 Business Ethics</td>
<td>All</td>
<td>Required</td>
</tr>
<tr>
<td>MGMT 316 Management of Organizations</td>
<td>Business Administration &amp; Accounting</td>
<td>Required</td>
</tr>
<tr>
<td>MGSC 300 Introduction to Information Systems</td>
<td>Business Administration</td>
<td>Required</td>
</tr>
<tr>
<td>MGSC 346 Production and Operations Management</td>
<td>Business Administration &amp; Accounting</td>
<td>Required</td>
</tr>
<tr>
<td>MKTG 304 Principles of Marketing</td>
<td>Business Administration &amp; Accounting</td>
<td>Required</td>
</tr>
<tr>
<td>MKTG 406 International Marketing</td>
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<td>Not Required</td>
</tr>
<tr>
<td>ECON 411 International Economics</td>
<td>Economics</td>
<td>Not Required</td>
</tr>
<tr>
<td>BUS 475 Capstone Course</td>
<td>Business Administration</td>
<td>Required</td>
</tr>
<tr>
<td>Travel Course to Vietnam</td>
<td>Business Administration</td>
<td>Not Required</td>
</tr>
</tbody>
</table>

12.3.3 Program Learning Outcomes and Curriculum Maps

Each degree program within Argyros has a Curriculum Map which connects core courses to specific Program Learning Outcomes. The curriculum maps show that courses found to be directly related to sustainability are spread out among all Program Learning Outcomes, but seem to be more concentrated within the Global Professional outcome. For example, Business Ethics, Management of Organizations, the Travel Course, and the Business Capstone Course all fulfill the Global Professional outcome. See Appendix for Curriculum Maps of each degree program.

12.3.4 Student Status

It is important for the future global citizens of Chapman to learn about sustainability in order to understand the connections between actions taken and how they affect our planet. As part of the Chapman University 2013 Environmental Audit, students were surveyed about their interests in and exposure to sustainability in their courses. Students were surveyed again in the 2017 audit and responses were compared to analyze change over time. Since 2013, Argyros students’ exposure to sustainability in their courses has increased over 20 percent (Figure 12.2).

![Figure 12.2](image)

*Figure 12.2 - Argyros surveyed student responses to the question: “During your time at Chapman, have you learned about sustainable practices in any of your classes?” in 2013 (n=168) and 2017 (n=139) Chapman University audit surveys.*
In addition to increased exposure to sustainability, Argyros students are significantly interested in sustainability in their courses. Half of surveyed students felt that taking courses related to sustainability would give them an advantage in the workforce, and another 37 percent answered that they thought it might give them an advantage (Figure 12.3). This indicates that incorporating sustainability within courses could give graduating students confidence when entering the workforce and interviewing for positions. In addition, 96 percent of surveyed Argyros students felt that it was at least somewhat important that sustainability is taught and promoted in higher education institutions such as Chapman University (Figure 12.4).

**Figure 12.3** - Argyros student survey responses \((n=133)\) to the question: “Do you think taking classes related to sustainability would give you an advantage in the workforce?”

**Figure 12.4** - Argyros student survey responses \((n=131)\) to the question: “In your opinion, how important is it that sustainability is taught and promoted in higher education institutions such as Chapman?”

### 12.4 Comparisons to Aspirational Schools

To assess our progress in incorporating sustainability within our Argyros School degree programs, it is useful to compare our programs and initiatives to those of our aspirational schools. Claremont McKenna College offers four courses within the Economics department that deal with the natural environment directly, whereas Chapman only offers one course. The following are two examples of Economics courses and their descriptions:

- **ECON 118 – The Process of Environmental Policymaking:** “This course focuses on how environmental, conservation, and natural-resource policies are developed and chosen in the policy processes of the United States and other countries. This focus permits examination of the methodologies of evaluating environmental policy options, the processes of policymaking, and the institutions involved in conservation, environmental improvement, and other policies that affect the environment. The analytic approaches include the policy sciences framework for understanding the process itself, the methodologies of ecosystem valuations, and the issues involved with different types of policy instruments for environmental and conservation management.”
ECON 142 – Politics and Economics of Natural Resource Policy in Developing Countries: This seminar course addresses the question of how countries dependent on natural resources ought to husband these resources and invest the proceeds productively. It employs the policy sciences framework to explore the political and economic–policy challenges of minimizing the abuse of resource endowments due to mis-pricing, corruption, intra-governmental conflict, and perverse governance arrangements. It examines why governments seem to abuse natural resources willfully, what forms of privatization hold promise for better resource use, what fiscal and governance arrangements are optimal for the relationship between government and state natural resource-agencies, and whether resource abundance is actually a “curse” rather than an advantage for a country’s economic and political development. The cases will be drawn predominantly from Africa, Asia, and Latin America.

In addition to more related courses, Claremont McKenna also offers more interdisciplinary programs related to sustainability. For example, they offer a Science and Management major which aims to provide students with a background in both science and managerial skills. Per their website it is important for Science and Management majors to:

1. Master the principles in their specific sequence/track (molecular biology, environmental biology, chemistry, physics, or other fields) and acquire the ability to apply them to solving problems including research questions.
2. Master the fundamental principles of economics and accounting.
3. Gain experience in the world outside the classroom.

This program is exemplary of interdisciplinary curriculum as it combines coursework in the environmental and earth sciences with business and economics.

Other institutions have statements that commit themselves to promoting sustainability. For example, Gonzaga University includes an Ethos statement in addition to a mission statement for the Gonzaga University School of Business Administration. The Ethos Statement says:

“As members of the Gonzaga School of Business Administration, we commit ourselves to the highest standards of professional conduct and personal integrity. Our professional aspirations reflect the educational mission of which we are a part: a commitment to intellectual rigor and personal development, a passion for social justice, and an active engagement in our communities. Collectively and individually we endeavor to embody the Gonzaga traditions of service, leadership and the celebration of all people in pursuit of the common good. To become men and women for others, we commit ourselves to developing the personal virtues of honesty, integrity, self-respect and respect for others. We acknowledge the responsibility we shall have as business leaders to use our knowledge and talents to better the lives of all who will be affected by the decisions we make and the institutions we help to create.”
Although the statement does not directly use the word ‘sustainability’, it acknowledges that business leaders should take responsibility for the decisions they make that will affect the lives of their stakeholders and that this should be promoted within their institution.

12.5 **Concluding Assessments**

12.5.1 **Areas where Chapman is doing well**

Since Catalog year 2003/2004 the number of courses related to sustainability within the Argyros School has doubled. In addition, the number of students who have been exposed to sustainability within their courses has increased significantly. A large percentage of students within the Argyros degree programs are interested in learning about sustainability in their courses. Chapman has made some steps to fulfill this student interest such as adding an experimental cross-listed course on corporate sustainability management in Fall of 2016. From survey and syllabi data, other courses are including sustainability discussion too, however this is not always consistent amongst same courses.

12.5.2 **Areas in which to improve**

Although student exposure to sustainability discussion within their courses has increased, it is still just above 50 percent. According to the search analysis one required course is directly related to the natural environment, and therefore every student should be minimally exposed. It is likely that students are either not connecting this course with the idea of sustainability, or the topics are a small portion of the course and are therefore not memorable. This shows a lack of sustainability discussion within required courses.

There is also a lack of exposure to sustainability within elective courses. Even though the number of related courses has increased, there are still only six and most of these are only taken by a very small number of Argyros students, as they are elective courses and not offered every semester.

In addition, there was no direct mention of sustainability anywhere in the curriculum until the Fall 2016 experimental course, Corporate Sustainability Management. Sustainability is not included in any Program Learning Outcomes or mission statements.

12.6 **Recommendations**

12.6.1 **Low Cost and/or Effort**

- Include Corporate Sustainability Management as a permanent course offered. This course will now be offered for the Environmental Science and Policy program every other Fall semester, but it has not officially been added to the Business Administration curriculum yet.
- Increase student awareness of current courses related to sustainability through email blasts about new courses, better advertisement during advising, or any other marketing efforts.
- Include sustainability in the mission statement of the Argyros School or create a separate sustainability or corporate social responsibility statement. Having this in the mission
statement would help incorporate discussion into more classes, and create consistency of sustainability related discussion amongst courses that already discuss it.

12.6.2 Medium Cost and/or Effort

- Create a Sustainability Certification Program for faculty or incentivize external workshops on sustainability. This will increase faculty awareness and allow faculty to better incorporate sustainability discussion within their required and elective courses. (See Chapter 16 for more information)
- Include sustainability in the Program Learning Outcomes. Sustainability could be added within an existing Program Learning Outcome (most likely the Global Professional outcome) or a separate Program Learning Outcome dealing with sustainability could be created.

12.6.3 High Cost and/or Effort

- Create new sustainability related courses such as an Environmental Economics Policy course. Inspiration for new courses could be taken from faculty members or aspirational schools’ curriculum.
- Create a Sustainability Management minor. This would likely be easier to accomplish once new courses are added to the curriculum.
- Create an option for Business Administrations to emphasize in Sustainability Management. This is more difficult to accomplish than creating a minor, but could be implemented once new courses are offered. According to the 2017 audit survey, there is significant student interest amongst Business Administration students in having a Sustainability Management emphasis option (Figure 12.5).

![Bar Chart](chart.png)

**Figure 12.5** - Business Administration student responses (n=72) to the question: “Would you be interested in an emphasis in Sustainability Management if it were offered at Chapman?”

12.6.4 Future Areas of Research

Ideas for future research that would be of interest in future audits would be a similar analysis of the graduate programs within the Argyros School. This would likely involve targeting graduate students when publicizing the audit survey and interviewing professors of graduate level courses.
12.7 Contacts
Mackenzie Crigger, Sustainability Manager, Chapman University (crigger@chapman.edu)

Jennifer Brady, Assistant Director, Administration, Argyros School of Business and Economics, Chapman University (jenbrady@chapman.edu)

Mario Leone, Assistant Professor, Clinical Faculty, Argyros School of Business and Economics, Chapman University (mleone@chapman.edu)

Dr. Kaan Ataman, Assistant Professor, Clinical Faculty, Argyros School of Business and Economics, Chapman University (ataman@chapman.edu)

Dr. Ross Mohr, Assistant Professor, Clinical Faculty, Argyros School of Business and Economics, Chapman University (mohr@chapman.edu)

Dr. Noel Murray, Associate Professor, Director, Walter Schmid Center for International Business, Chapman University (nmurray@chapman.edu)

John Shideler, Instructor, Argyros School of Business and Economics, Chapman University (shideler@chapman.edu)

Thomas Campbell, Professor, Argyros School of Business and Economics and Dale E. Fowler School of Law, Chapman University (tcampbell@chapman.edu)

Dr. Jason Keller, Chapman University (jkeller@chapman.edu)

Dr. Abel Winn, Associate Professor, Argyros School of Business and Economics, Chapman University (winn@chapman.edu)

12.8 References
Argyros course syllabi for 2016/2017


### 12.9 Appendixes

#### 12.9.1 Curriculum Maps

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>BS Business Administration Program Learning Outcomes</th>
<th>Curriculum Map and Assessment Types</th>
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<td>M-MFT</td>
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<td>M-Crse Emb</td>
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I = Introduced, R = Reinforced, M = Mastered
MFT = ETS Exam, Fac Tm = By Faculty Team, Crse Emb= Course Embedded Assessment

**Figure 12.6** - Program Learning Outcomes and the Curriculum Map for the Business Administration degree program (Chapman University).

<table>
<thead>
<tr>
<th>Required Courses</th>
<th>BS Accounting Program Learning Outcomes</th>
<th>Curriculum Map and Assessment Types</th>
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I = Introduced, R = Reinforced, M = Mastered
MFT = ETS Exam, Fac Tm = By Faculty Team, Crse Emb= Course Embedded Assessment

**Figure 12.7** - Program Learning Outcomes and the Curriculum Map for the Accounting degree program (Chapman University).