

THE UNIVERSITY OF SOUTHERN CALIFORNIA
Marshall School of Business
DSO 505 (16298) – Sustainable Supply Chains – Fall 2019

Time:	Wednesdays, 2:00-5:00 pm Wednesdays, 6:00-9:00 pm	Room:	BRI202 online
Instructor:	Dr. Greys SOŠIĆ	Office:	Bridge Hall 401E
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Office hours:	WTh, 5:00-6:00 pm	Skype hours:	by request (for online section)

COURSE SCOPE AND OBJECTIVES

Environmental issues and sustainability efforts can open many opportunities for businesses—product innovation can lead to first-mover advantage, environmental product differentiation can open new markets, green sourcing and waste reduction can reduce operating cost, and so on. At the same time, they can present significant challenges—for instance, governments and communities are imposing higher standards on pollution, resource exploitation, etc.

Upon successful completion of this course, students will be able to:

- Explain the sustainability challenges and opportunities facing supply chains today and master relevant vocabulary and tools;
- Describe the factors that are contributing to the adoption of sustainability strategies, such as legislations that are penalizing negative environmental and social impacts, and society's expectations of business in terms of health, human rights, and the environment;
- Demonstrate that supply chains today cannot be concerned only with creating shareholder value; their performance is also measured in terms of social, environmental and economic impact;
- Engage in introducing/adopting/expanding sustainability practices in their field of work.

The main topics covered in the course are:

- ❖ Sustainability concepts and frameworks
- ❖ Sustainable design of products
- ❖ Carbon footprint and lifecycle assessment
- ❖ Closed-loop supply chains
- ❖ Supplier management
- ❖ Facilities management
- ❖ Renewable energy
- ❖ Transportation decisions
- ❖ End-of-life management
- ❖ Reverse logistics
- ❖ Strategic sustainability implementation.

The class format includes lectures, case discussions, and movie clips.

COURSE MATERIALS

Required: *Course Reader (CR)* – Package of cases and readings available at USC bookstore. In the syllabus, a number such as CR#5 refers to 5th article in sequence in the course reader.

Digital version of the course reader can be purchased at
www.universitycustompublishing.com

Handouts (HO): Handouts posted on the Blackboard.

Recommended:

- ❖ *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming* edited by P. Hawken, Penguin Books, 2017.
 - ❖ *Climate Shock: The Economic Consequences of a Hotter Planet* by G. Wagner, M.L. Weitzman, Princeton University Press, 2015.
 - ❖ *This Changes Everything: Capitalism vs. The Climate* by N. Klein, Simon & Schuster, 2014.
 - ❖ *Cradle to Cradle: Remaking the Way We Make Things* by W. McDonough, M. Braungart, North Point Press, 2002.
 - ❖ *The Responsible Company* by Y. Chouinard and V. Stanley, Patagonia Books, 2012.
 - ❖ *Reinventing Fire: Bold Business Solutions for the New Energy Era*, by A. Lovins, Chelsea Green Publishing, 2011.
 - ❖ *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage* by D.C. Esty, A.S. Winston, Yale University Press, 2006.
 - ❖ *Earth, Inc.: Using Nature's Rules to Build Sustainable Profits*, G. Unruh, HBP, 2010.
 - ❖ *The Ecology of Commerce: A Declaration of Sustainability* by P. Hawken, Harper Paperbacks, 2010.
 - ❖ *Natural Capitalism* by P. Hawken, A. Lovins, L.H. Lovins, Little, Brown and Company, 2008.
- ... and many others... You can also look at a number of journals, such as *Science*, *Nature*, *Scientific American*, etc.

COURSE POLICIES

This course covers both quantitative and qualitative materials, and uses cases for discussion of issues and illustration of approaches. We will use Excel as a modeling/solution finding tool when addressing several topics. Active participation in class is important throughout the course. To ensure everyone's participation, I may at times resort to cold calling.

For the online section, if you are watching live, you can share your comments with class; if you watch the recordings, you can email me your thought before or after class, or you can contact me through Skype. I will also consider participation in the Discussion board on the Blackboard.

For the on-campus section, you should arrive to classroom on time. If you have conflicting schedules that prevent you from that, please let me know at the beginning of the semester.

GRADING

Group case report (1)	15%
Individual submissions (5 out of 8)	15 %
Carbon emission calculation assignment	15%
Test	45%
Class participation	10%

GROUP CASE REPORT

Please form teams of up four persons within the first two weeks; you will be working in these teams for the group assignments. Use the "Group" option on the Blackboard to join one of the teams.

The case is to be discussed within your team and you will submit (as a team) a written report. This Syllabus provides some suggested questions that you should address in your analysis. Each team is required to submit a report on one case study (Dell in week 7). Case write-up should be at most 4 pages and single-spaced (11 or 12 point font), with appendices attached (not included in the number of pages). It should be submitted on-line through the Blackboard.

When preparing your report, imagine that you, as a consultant, have to study an organization, to identify

the main issues it faces, and to propose a set of recommendations. Your written report should begin with an executive summary, about half page long, summarizing the most important problems and your recommendations (think about it as the “elevator pitch”—you have to explain the main details of your report to an executive during the elevator ride). The rest of the report should be organized as follows:

1. Brief description of the company and its environment
2. Brief description of the problems and issues to be addressed (the questions in the syllabus related to the specific case should guide you in identifying those issues).
3. Recommendations and implementation plan.
4. Analysis that discusses why the recommendations will solve the problems identified.

You may choose to organize the report differently; however, please ensure that the above aspects are covered and the report is well organized with clear section and sub-section headers. Please avoid repetition of case facts and long expositions (remember the page limit)! Consider what you believe are the most important factors (and why). General solutions to specific problems will get you little credit. Creativity in analysis and suggestions that are grounded in case facts will be given high credit. Please state any assumptions made clearly.

GROUP ASSIGNMENT EVALUATION

Team assignments provide a valuable learning experience—how to work effectively and efficiently in groups, learning from others, and honing your ability to communicate to others. Although your team’s grade depends on each member’s efforts, some students can be tempted to let others carry their load. In order to provide an incentive for all students to make maximum contributions to the study group, you will be asked to grade each team member’s contributions. Your group grades will be adjusted to obtain an individual grade based on feedback about performance provided by other members of the group (see the group assessment forms posted on the Blackboard). If you do not submit your group assessment form, it is assumed that you have assigned a rating of 100% to all your group members. The forms can be submitted in person or via e-mail, but no later than the exam date.

INDIVIDUAL (SHORT) SUBMISSIONS

In addition to the case for which you are required to submit group report, we will be discussing other cases and articles. You should be prepared for class discussion, and this Syllabus provides some suggested questions that you should address. For the individual submissions, follow the link on the Blackboard and enter the required information before the class. The objective of the short submission is to ensure that you prepare the case. For that reason, no late submissions will be accepted.

Unlike the assignments discussed in previous sections, which are meant to be solved in teams, this section discusses individual submissions, which means that you have to prepare them on your own. You can talk about the assignments with your colleagues or me, but you have to prepare and submit them individually. If you use any material outside of that provided as part of the class (found on Internet, journal articles, etc.) make sure to reference it properly; see section on academic conduct for more details.

As long as your answer shows that you have given sufficient thought to the analysis, you will get full credit. Note that this in general requires answers that are longer than one sentence. Each submission is worth up to 3 points, and the maximum number of points you can obtain for individual submissions is 15. If your total exceeds 15 points, it can improve your participation grade (note that in this case, each additional submission does not increase your participation by 3 points).

CARBON EMISSION CALCULATION ASSIGNMENT

During week 3, we will discuss issues related to measurement of the carbon footprint. You will have to apply the material covered to the analysis of the Leather Brief Co (LBC) case, posted on the BB (along with a spreadsheet for your analysis). The case is an individual assignment and it requires you (individually, not as a part of a team) to calculate the carbon footprint for the LBC, determine the scopes

of different emissions and assign emission responsibilities to LBC. You should complete the spreadsheet and prepare the answers to questions on p.9.

EXAM

The exam is scheduled for week 8. The questions will have several formats: multiple choice, true/false, and problems.

For the on campus students, the exam will be closed book; however, you can prepare a “cheat-sheet”—one letter-sized sheet of paper hand-written on both sides (for a total of 2 hand-written pages). I will remove all printed or photocopied material!

Online students will take the exam on the Blackboard; you will have a 24 hour window in which to take the exam, but once you start, you have to complete the exam in one two-hour sitting.

If there are extenuating circumstances that prevent you from taking the test, you must discuss the reason with me before the time of the test. You will not be given a make-up test unless you obtain a permission from me in advance. In addition, you must be able to document the extenuating circumstance. If you miss the test due to a medical emergency that can be documented and verified, then a make-up test will be given. Otherwise, a grade of zero will be given for the missed test. Note that a make-up test cannot be taken before the actual test date!

GRADING

Graded work will be posted on the Blackboard. Disputes over graded material should be brought to my attention as soon as possible.

CLASS PARTICIPATION

Class participation requires that you do the assigned readings, analyze the cases based on the questions given and participate actively in class. I prefer substantive comments based on good analysis rather than brief, general comments that add little to the discussion and learning. Be prepared to defend your suggestions or solutions!

If you are reluctant to talk in class or if you are not physically attending, but would like to show your preparation, please provide me with your analysis/comments through email. This may include material related to the topics covered in class from your work experience, from additional articles/videos that you have found, readings on the Blackboard, etc. Online students can also contact me through Skype, by arranging a time window that works for them and me.

I also encourage you to participate in the Discussion board on the Blackboard, where you can discuss the case readings, post additional relevant material (readings, videos, website links, etc.), start discussion with your colleagues, and so on.

GETTING HELP

If you have questions about any aspect of the course, you can always talk to me. If it is a quick question, you can contact me before or after the class, or during the break. If you need more time or privacy, on campus students can come to my office hours. If you cannot make my office hours, you can contact me and we can arrange for an alternative time. Online students can talk to me through Skype. The best way to reach me is by e-mail.

ACADEMIC CONDUCT

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tensions accompanying

examinations. Where a clear violation has occurred, however, the instructor may disqualify the student's work as unacceptable and assign a failing mark on the paper.

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

SUPPORT SYSTEMS

Student Counseling Services (SCS) - (213) 740-7711 – 24/7 on call

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

<https://engemannshc.usc.edu/counseling/>

National Suicide Prevention Lifeline - 1-800-273-8255

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. <http://www.suicidepreventionlifeline.org>

Relationship & Sexual Violence Prevention Services (RSVP) - (213) 740-4900 - 24/7 on call

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. <https://engemannshc.usc.edu/rsvp/>

Sexual Assault Resource Center

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: <http://sarc.usc.edu/>

Office of Equity and Diversity (OED)/Title IX compliance – (213) 740-5086

Works with faculty, staff, visitors, applicants, and students around issues of protected class. <https://equity.usc.edu/>

Bias Assessment Response and Support

Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. <https://studentaffairs.usc.edu/bias-assessment-response-support/>

Student Support & Advocacy – (213) 821-4710

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. <https://studentaffairs.usc.edu/ssa/>

Diversity at USC – <https://diversity.usc.edu/>

Tab for Events, Programs and Training, Task Force (including representatives for each school), Chronology, Participate, Resources for Students

STUDENTS WITH DISABILITIES

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs (www.usc.edu/disability). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs

(DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

STATEMENT ON TECHNOLOGY USE

Please note that communication devices such as cell phones, smart phones, tablets, etc. capable of sending and/or receiving electronic communication and all entertainment devices are to be turned off and kept off throughout the class session. Receiving or sending communication or entertainment during class disrupts the learning environment and is rude to those around you.

Course plan at a glance (tentative)

Week	Topic	Readings	Submission
1	Introduction - Sustainable supply chains		
2	Measuring carbon footprint	Future-proof your climate strategy (CR#1) Hand dryer HO	Short #1 – Future-proof your climate strategy (q.1)
3	Measuring carbon footprint Design and planning	Leather Brief Co HO Levi Strauss (CR#2)	Carbon emission calculation Short #2 – Levi Strauss (q.1)
4	Sourcing Operations	Starbucks (CR#3) Coda Coffee (CR#4)	Short #3 – Starbucks (q.2) Short #4– Coda Coffee (q.2)
5	Operations Guest speaker from Sweetgreen	Kaiser Permanente (CR#5)	Short #5– Kaiser (q.2)
6	End-of-life management	Cook Composites (CR#6) Whirlpool (CR#7)	Short #6 – Cook Composites (q.3,4,5) Short #7 – Whirlpool (q.1,2)
7	Bringing it together	Dell (CR#8) Wal-Mart (CR#9)	Short #8 – Wal-Mart (q.2) Group #1 - Dell

Detailed course plan

Week 1 Introduction-- Sustainable supply chains

Week 2 Measuring carbon footprint

Readings:

- *Future-Proof Your Climate Strategy* (HBR May-June 2019)

Discussion Questions:

1. What risks can climate-change policies pose to companies' strategies and returns? How can internal carbon pricing help in dealing with those risks?

- *Streamlined Life Cycle Assessment Study* (Environmental Resources Management)

Discussion Questions:

1. What is the purpose of the LCA?
2. What are the different stages involved in the LCA?

Week 3 Measuring carbon footprint; Design and planning

Readings:

- *Leather Brief Co.*

Discussion Questions:

1. By using the data in the accompanying spreadsheet, calculate the total GHG emissions in LBC's supply chain.
 - For facilities, take into account direct carbon emissions and electricity-related emissions
 - For own transportation vehicles, take into account total fuel and its emission factor
 - For outsourced transportation, take into account total weight, distance, and corresponding emission factor
2. Identify each emission component by its scope
3. Which organizational boundary do you believe is most appropriate for the Leather Brief Co.? Why?
4. Does this calculation give a complete picture of LBC's carbon footprint? Why? How would you describe this LCA assessment?

- *Levi Strauss & Co.: Driving Adoption of Green Chemistry* (Berkeley case #B5867)

Discussion Questions:

1. *What internal and external factors is LS&Co. responding to with the Screened Chemistry Program? How is this program different from other chemical management strategies within the textile industry?*
2. How can LS&Co. advance its screened chemistry approach? Who are the key partners? What are the largest barriers to the adoption of LS&Co.'s Screened Chemistry approach? Is there a role for business, NGOs, and governments outside of the apparel industry?
3. Who should bear the responsibility and cost for screening chemistries? Who stands to gain from having chemicals screened for safety? Are there ways to share this cost?
4. What leverage does ZDHC have on the apparel industry? Is ZDHC the best avenue for LS&Co. to advance its Screened Chemistry Program?

➤ **Your spreadsheet and the writeup on the LBC due at the beginning of class**

Week 4 Sourcing; Operations

Readings:

- *Starbucks Corporation: Building a Sustainable Supply Chain* (Stanford case #GS-54)
Discussion Questions:
 1. What are the main issues that Starbucks faced with its supply base in 2005? How did it approach this problem?
 2. *What are the main benefits from C.A.F.E. for Starbucks? For the farmers?*
 3. What are the main challenges in implementation of C.A.F.E.?
 4. How are sustainability-related sourcing issues faced by Starbucks different from those faced by, say, Apple or GM?

- *Coda Coffee and bext360 Supply Chain: Machine Vision, AI, IoT, and Blockchain* (Thunderbird case #TB0539)
Discussion Questions:
 1. What are the benefits and limitations of FairTrade certification to business owners like Tommy and Tim Thwaites?
 2. *How does bext360's SaaS solution ensure transparency? What are the key strengths and limitations?*
 3. How can Coda sell the value of their partnership with bext360 to their wholesale and retail customers?

Week 5 Operations; Guest speaker from Sweetgreen**Readings:**

- *Kaiser Permanente: Linking Renewable Energy and Healthcare* (Michigan case #W04C81)
Discussion Questions:
 1. What are the advantages of being the first mover in an industry when it comes to renewable technologies? What are potential drawbacks?
 2. *How did government regulations shape KP's energy and sustainability ventures? Should the government do more/less to support investments like the ones that KP is considering?*
 3. How could KP build a business case around renewable energy partnerships and what could this mean for the healthcare industry as a whole?
 4. How could KP's model be extrapolated to smaller hospitals, pharmaceutical companies, insurers, or health-focused NGOs?
 5. Who is responsible for increasing public awareness of the connection between climate change and health? How should these parties increase awareness?

- The guest speaker from Sweetgreen will join us online via Zoom at 6pm. The on campus class for the day will end early, and the students are expected to join the Zoom meeting at 6pm or watch the recording after class.

Week 6 End-of-life management**Readings:**

- *Cook Composites and Polymers Co.* (HBS #9-608-055)
Discussion Questions:
 CCP faces three options for addressing its rinse styrene waste stream:
 - (a) Continue business as usual, sending its rinse styrene to cement kilns;
 - (b) Sell its rinse styrene on a waste exchange; or
 - (c) Proceed with developing the concrete coating that uses its rinse styrene (BPS).
 1. What criteria should Mike Gromacki consider when deciding whether to pursue the waste exchange or the concrete-coating by-product? If you were Mike, what would you recommend to management to address its rinse styrene waste stream?

2. Compared to business as usual, how would selling rinse styrene to a waste exchange or producing the concrete coating by-product affect the production of gel coats?
 3. Compared to business as usual, what are the financial implications of selling rinse styrene to a waste exchange or of producing the concrete coating by-product?
 4. Compared to business as usual, how would you evaluate the relative environmental impact of producing the concrete coating by-product? When considering carbon dioxide (CO₂) emissions, consider the impacts system-wide (that is, not just at CCP's factory). What tradeoffs are involved? For each pound of rinse styrene diverted from cement kilns to create concrete coatings, by how much do CO₂ emissions rise or fall? Assume that CCP's sales of concrete coatings would substitute for sales by other concrete coating producers (that is, CCP's sales would not alter the total sales quantity in the concrete coatings market).
 5. Which option would you choose?
- *Whirlpool Corporation: Reverse Logistic.* (Ivey case #9B11D001)
Discussion Questions:
 1. Which of the three options facing whirlpool would you adopt?
 2. What is the collection cost of EPR for Whirlpool (using WEEE as an example)? What is the potential revenue that Whirlpool can generate from scrap?
 3. How does EPR compare with the cost of distribution today? Why do we see a difference?
 4. What other considerations should be made?

Week 7 Bringing it together

Readings:

- *Dell: Upcycling Ocean Plastics Through Supply Chain Innovation* (Michigan case #W91C21)
Discussion Questions:
 1. What is the business case for Dell entering the ocean plastics space?
 2. Is Dell's approach capable of delivering additionality?
 3. Continuity of supply and local economic factors were introduced as risks in the case. What other risks are associated with Dell's ocean plastics strategy?
 4. How should the consortium be structured? What leadership role, if any, should Dell take?
 5. Should Dell invite competitors into the consortium? What are the risks associated with doing so?
 6. Who should be responsible for certification of the supply chain? What are the risks and benefits associated with third-party certification and NGO-led, Dell-led, shared consortium responsibility?
 7. How should Dell approach its future use case strategy? Should Dell consider consumer-facing products? Should Dell's open source strategy extend to its R&D on ocean plastics or packaging?
- *Greening Walmart: Progress and Controversy* (HBS case 9-316-042)
Discussion Questions:
 1. Given the fact that Wal-Mart's customers generally are unwilling to pay a premium for environmentally friendly products, how is the company deriving business value from its sustainability strategy?
 2. *Wal-Mart's sustainability strategy has generally been very profitable. However, two initiatives that Wal-Mart pursued benefit the environment, but decrease Wal-Mart's profits—holding recycling/take-back events as part of its e-waste project, and reducing its prices on CFLs and foregoing incandescent light bulb sales. How would you justify pursuing them?*
 3. How did Wal-Mart green strategy evolve over time? Why? What can other companies learn from this?

➤ **Case study report on Dell due at the beginning of class**