

Course purpose and content

This course discusses innovative approaches organizations engage to embed sustainable practices into their behavior and systems to improve their core mission. Students will learn to critique and integrate several sustainability perspectives, including scientific, social, economic, environmental, and promotional viewpoints. This course will discuss how to integrate these approaches into a broad spectrum of organizational concerns such as environmental impacts, stakeholder satisfaction, quality, productivity, cost, lean, profit, brand image and brand value, supply chain management, quality of work life, employee engagement, market selection, product design, customer satisfaction and retention, value creation and valuation, theory of constraints, marketing, human resource management, accounting, base of the pyramid, triple bottom line, engineering , operations, and health.

Organizations face rising prices and growing volatility from expanding demand and dwindling supplies of renewable biomass and nonrenewable fossil fuels, metals and minerals. Deterioration of natural capital, climate, forests, oceans/fish, biodiversity, air, soils, the ozone layer, waste management, chemical build-up, and desertification all reduce the capability of ecosystems to provide resources and services essential for life, while simultaneously posing significant threats to health and wellbeing. These forces tighten market requirements and regulations, and change consumer and investor preferences. Furthermore, one billion people face hunger and water shortage daily while 4.5 billion make less than seven dollars a day and are mostly ignored by modern economic systems.

Sustainability addresses both opportunity and risk around three major organizational objectives, the desire to sustain resources, health, and stakeholder value. The first objective is to sustain the ability to economically source needed resources and services. It spurs organizational approaches that seek abundant, benign resources, renewably, and through reuse, in a way that maintains and enables natural capital and biodiversity to grow, so that the capabilities of ecosystems to provide abundant resources and life-support services in the future are strengthened. These approaches lead to dramatic reduction of material, energy, and water flows extracted from ecosystems, as well as development of capabilities to manage material flows and value throughout product and service lifecycles. The second challenge seeks to build and sustain a healthy planet for all life forms by eliminating systematic buildup of toxins, waste, greenhouse gases, and substances of any kind. These approaches seek to manage all outputs in a way that maintain their value throughout and beyond their lifecycle, ensuring that all outputs are entirely consumed safely, especially at end-of-life, perhaps through reverse logistics and reuse. The third objective spawns approaches that extend value creation to all stakeholders, including those deep in customer and supply chains, especially those without power and privilege, the base of the pyramid, and those living in the future.

The cases presented during the course will demonstrate a wide variety of benefits to sustainability, including improved reputation and brand value, innovative services and products, access to new markets, increased market share, more resilient and better integrated supply chains, dramatic cost reduction, improved employee satisfaction

and retention, reduced risk, and enhanced creativity through innovative conceptualization, partnerships and collaboration.

When addressing sustainability from a systems perspective, systems typically involve multiple stakeholders with different and conflicting objectives, several organizational functions, and multiple levels of management. This course discusses sustainable, value-creation approaches that seek to improve multiple system-performance objectives in order to satisfy a broad spectrum of stakeholder and customer groups, including those without privilege and wealth. Sustainable value-creation involves a strategic, system-wide perspective as well as a focus on individual customer and stakeholder segments. Sustainability requires development of infrastructure and capabilities for both breakthrough and incremental improvement; analytical techniques for analyzing and changing systems, products, services, supply and customer chains; new principles and analysis; data-based, participatory decision-making; creativity techniques for innovative design of processes and systems; and methodology for employee involvement and empowerment. Pedagogy also addresses supportive organizational structures and policy issues.

The course discusses embedding sustainable improvement into the generative processes of mission-central systems in a variety of contexts, industries and ownership structures by engaging and strengthening a broad range of improvement approaches. Application includes

- A variety of job functions including leaders, healthcare professionals, operations and human resource managers, engineers, supply-chain managers, market researchers and product managers, sales, accounting, finance, production, and customer service
- Broad sector application such as service, manufacturing, health care, education, government, retail, banking, real estate, insurance, and transportation
- All ownership structures, public and private, profit and not-for-profit.

Contacting the professor

You may reach Professor Mark Finster at:

Office: 3536 Grainger Hall

Email: mfinster@wisc.edu

Office hours: T, Th: 11:00 – 12:10

and by appointment

Biographical sketch

Mark P. Finster is a faculty member in the Wisconsin School of Business, the Gaylord Nelson Institute for Environmental Studies, the College of Engineering, the Center for Quality and Productivity Improvement, the Energy Institute, the Consortium for Global Electronic Commerce, Industrial System Engineering, Sustainable Systems Engineering, and the Center for Quick-Response Manufacturing. He also serves on the executive boards of the Center for Operations and Technology Management, the Global Studies program, and Manufacturing Systems Engineering.

Professor Finster has received the Gaumnitz Distinguished Faculty Award and the Mabel W. Chipman Excellence in Teaching Award and has helped improve the management systems of more than 150 businesses, government agencies, and nonprofit organizations from four continents.

Professor Finster received his Ph.D. from the University of Michigan and has served as a professor at Cornell and Johns Hopkins Universities. He is a five-time National Science Foundation (NSF) Scholar and chaired the NSF session that established its national research program in organizational excellence.

Professor Finster's research interests address sustainable approaches to improvement and the role sustainability plays in innovative strategy and design of products, services, systems and businesses.

Text, readings and schedule

This course will use the draft of the text below:

Finster, Mark P., 2016. *Sustainable Approaches to Improvement*.

Feedback and suggestions for ways to improve the textbook is appreciated and worth extra credit. Electronic versions of most textbook chapters and of all powerpoint lectures will be available from the course web portal at Learn@UW. They provide the primary course readings.

Schedule

The schedule is flexible and may change to reflect interests of the class.

Weeks 1 – 2: Course overview; embedding sustainability into organizational improvement

Definitions & approaches to sustainability: Triple bottom line, corporate social responsibility, corporate shared value, resiliency, robustness

Embedding sustainability into approaches to performance management such as quality, defect reduction, lean, & six/lean/green sigma

Embedding sustainability into approaches to innovation, value management, base of the pyramid, reverse innovation, industrial ecology & symbiosis, blue ocean & transformation strategy

Systematizing sustainability, infrastructure development, culture change, employee engagement, standards, supply chains, and learning networks.

Sustainability approaches from ecological & environmental economics, natural capital accounting, ecosystem pricing

Reading: Chapter 1

Weeks 3 – 4. Management archetypes: Matching a sustainability approach to organizational characteristics such as type of management

Historical evolution of organizations and management

Embedding sustainability into:

Small organizations: locality, core competencies, assets & liabilities to consider

Mass production systems with unskilled labor, design by experts, standards & workplace sustainability

Functionally-focused organizations, management by objectives, functional sustainability, system thinking

Customer-focused organizations, customer-driven sustainability, extending value stream management.

Reading: Chapter 2

Week 5. Sourcing from natural capital: risks, opportunities, driving forces, trends and innovative practices

Source management and natural capital:

Forests

Source certification, chain of custody, traceability, transparency, visibility and security

Natural capital accounting, ecosystem service pricing, internal carbon pricing

Desertification, soils, and agriculture

Oceans, fish, fish farms

Marketing, social media, retail certification, partnerships, and learning systems

Ecosystem services, biodiversity, ecosystem restoration, zero net impact strategies

Water, reservoirs, virtual water, colors of water, strategies

Reading: Chapter 3

Week 6. Value creation, sustainability metrics and natural capital

Value creation, metrics, and natural capital

Population, affluence, and consumption growth

Seminal equation of industrial ecology

Impacts of technology and evolution toward a service economy – converting products into services

Evaluating objectives, metrics, and benchmarking

Organizational-wide and country flow management metrics, Germany, Japan

Rucksacks, footprints, & magnitude of change needed

Reading: Chapter 4

Week 7. Buildup of toxins: Risk, opportunity, trends, and innovation

Toxins & health, acute & chronic, prevalence of toxins

Sustainability in health care

Water, power production, agriculture, factory farms

Regulations & source management, lead countries & states

Green chemistry: bioplastics, strategy, assessment tools

Reading: Chapter 5

Week 8. Buildup of waste and greenhouse gases: Risk, opportunity, trends, and innovation

Waste management & innovative sourcing

The new lean – Landfill free facilities

Greenhouse gases, cap & trade, internal carbon pricing & taxes, innovation, investment approaches

Economic benefits

Reading: Chapter 6

Week 9. Base of the pyramid and reverse innovation

Risk & unintended consequences

Opportunities for innovation

Reverse innovation

Cases: GE, P&G, Gillette, Nokia, Philips, Xerox, HP, Microsoft, Nestlé, John Deere, etc.

Reading: Chapter 7

Week 10. Frameworks for sustainability

Ethical, responsibility & social norms

Benefits, triple bottom line, corporate shared value

Environmental problems

Science-based planetary parameters

Paradigm shift for organizational behavior – embedding sustainability into a core mission

Assessing organizational capabilities

Reading: Chapter 8

Weeks 11-12. Core concepts

Long-term thinking approaches

Flow analysis and infrastructure management; product design

Value management for customers and stakeholders

Continuous improvement

Inclusion approaches, crowdsourcing, cross functions

System thinking

Knowledge management and learning systems

Data, variation, analytics, system and special causes

Reading: Chapter 9

Weeks 13 – 15. Strategy and leverage: Finding leverage for sustainability. Cases

Backcasting from a sustainable vision, solution multipliers, assessing an organization's sustainability approach, improving wind power, sourcing

Leverage to close water gaps, hydrological cycles, water and supply chains, Unilever's supply-chain water focus, water assessment tools, Kellogg's water leverage, Adidas's water leverage, water quality leverage, Grohe's water strategy, water for competitive advantage, water innovations, water branding & marketing strategies, use of water sustainability to enter difficult markets, water education as a competitive strategy, development of new marketing channels through water reduction activities, demand- and supply-side mechanisms and costs, regional differences in water leverage: India's water cost abatement curve, drip irrigation at the base, Nestlé's water strategies, community partnerships and learning systems, Coca Cola's water strategy in India: successes & failures, Coca Cola's Australia strategy – contrasting contextual drivers, Miller-Coors water strategies, Brazil, South Africa water scenarios, water payback curve, other key leverage factors: scalability, local supply chain capability, management complexity, up-front transaction costs, China

Design for consumability of outputs

Sourcing strategies: supplier involvement, fuel efficiencies, logistics efficiencies, sea transportation challenges, packaging, Coca Cola Packaging strategies, certification, traceability, transparency

Sustainable design, dematerialization & transmaterialization strategies, turning products to services, BMW and car sharing, urban traffic reduction, Daimler's and Zipcar's car sharing strategies, remanufacturing, turning products to services, focus on customer & supply chains, Walmart's sustainability objectives & strategies, Patagonia

Biological business models, cycle management, technological & biological cycles, Nintendo's strategies, Coca Cola's plant based packaging; Sony, Nokia & Sprint

reuse strategies; Teijin, Sears, Patagonia, Bagir & Design Tex approaches to reuse, H&M clothing reuse, automotive reuse, Munich Zoo, urban agriculture in Chicago, industrial ecology, Kalundborg's industrial symbiosis

Grades

Three activities determine course grades.

Homework:	45%
Application papers:	45%
Class participation:	10%

Grading scheme:

A:	93 – 100
AB:	88 – 92
B:	81 – 87
BC:	74 – 80
C:	67 – 73
D:	60 – 66
F:	Below 60

Homework

The course web portal provides regular assignments that address topics covered during the lecture. They may be found under the quizzes section of the Assignments pull-down menu. Homework are be graded electronically.

Application papers

Submit application papers at the end of the 8th and 15th weeks. An application paper may address any topic of interest to the student as long as it connects to course material and to an organization. Typically projects typically begin by selecting an exemplary organization and a topic of interest to study. Then study publically available information, such as websites, sustainability and responsibility reports, the organization's annual report, and publications about the organization, including critiques and criticisms. Learning networks are valuable sources of information and often provide insightful case studies on cutting-edge practices. After understanding the organization's approaches and practices for sustainability, critique its efforts. Identify opportunities for developing and improving its sustainability by embedding more and better sustainable practices into its core mission. Illustrate how the improvement might progress by finding best practices in other organizations that the organization might engage, and describe how the recommended practices help improve the organization's ability to deliver its core mission. An application paper may be an individual or a group effort. Each paper has a limit of 2000 words per person. Charts, graphs, tables, images and the bibliography do not count. So you may use these liberally.

At your option, you may work in teams when writing your application papers. Teams and team members may change from one paper to the next. So a team of two will submit approximately a 4000 word paper.