

The George Washington University
Environmental and Energy Management Program
Global Connections: Standards in Technology, Business & Public Policy
Syllabus: EMSE 6992

Course and Contact Information

Course: EMSE 6992

Meeting time: Thursdays, 6:10 pm – 8:40 pm

Location: Tompkins Hall, Suite 103

Instructor

Name: Joe Cascio, Esq.

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Office hours: As needed

Bulletin Course Description

What are standards and why care about them? Standards are agreed-upon ways of doing something – of making a product, managing a process, delivering a service or supplying materials.¹ In our technologically advancing and connected world, they increasingly shape the competitiveness of firms and economies, the health of individuals and complex systems (energy, trading, financial reporting), and the fate of the planet. Yet, few business managers, government officials or those who advise them know much about the standardization process for voluntary, consensus standards and who creates them, much less how to get involved in order to shape them and take full advantage of their existence. This inter-disciplinary, graduate-level course addresses that gap by teaching the knowledge and skills needed to operate effectively and provide leadership in the standards arena. It gives special attention to the exciting potential for voluntary consensus standards to promote prosperity and safety at a time when governments find it difficult to act.

Relevant Information

Course web page: <https://eemi.seas.gwu.edu/course-offering-emse-6992-80>

Instructor web page: <https://eemi.seas.gwu.edu/joe-cascio-esq>

EEMI: <https://eemi.seas.gwu.edu/>

EEM Program: <https://eem.seas.gwu.edu/>

Guest Lecturer: Mr. Scott Cooper, VP, American National Standards Institute

Prerequisites

No formal course prerequisites.

Required Text(s)

¹ To be more precise, standards are published documents that spell out the specifications and procedures that ensure the safety and reliability of the materials, products, methods, and/or services people use every day.

Author	Title	Edition
National Research Council, National Academy Press (1995)	<u>Standards, Conformity Assessment, and Trade into the 21st Century</u>	ISBN 0-309—5236-X (1995) *Students to arrange own access to text
Various	Course reading list contains additional references to be assigned with lessons at the discretion of the instructors	*Will be available electronically

The professor will provide other handouts to be made available electronically (PDF format.)

Learning Outcomes:

The overarching learning goal of this course is to introduce you to the mildly esoteric but exciting world of standards, standards organizations and standards development in a way that leaves you knowledgeable about their key factors, prepared to apply that knowledge in professional settings including those for creating standards, and motivated and well-equipped to continue learning on your own. The learning outcomes below represent more specific dimensions of the goal, organized around basic questions about standards.

1. What are standards and what do they do? Technology standards control access to markets, and thus play a critical role in the fortunes of firms and countries. By the end of this course, you will be able to explain standards, the wide range of subjects they cover, and the different types that exist for different purposes, with special attention to voluntary, consensus standards.
2. Why do we need standards? There are many answers, from making sure spare parts fit, to ensuring that transmitters and receivers work together, to protecting children from toxins in toys. By the end of this course you will be able to explain how standards promote consumer and worker safety, economic development and environmental sustainability, and why they are sometimes controversial.
3. Where do standards come from and how are they enforced or revised? By the course's end, you will be able to explain the existing industrial, national and international institutions for developing standards and for assessing and enforcing conformity with them. You will have opportunities to meet with senior executives at the American National Standards Institute (ANSI), the National Institutes for Standards and Technology (NIST), and other leading standards bodies.
4. How can I use such knowledge in my career? By the course's end, you will be able to identify and explain the need for a new standard or risks posed by a proposed one, support the development and consensus negotiation of an appropriate standard, and assist with its implementation and/or enforcement in your professional setting. You will be able to assess and show how standardization does or would affect corporate strategy, product design, and management systems. For those in public policy, you will be able to evaluate the need for and implications of new standards and the challenges of attaining agreement on them.
5. How else might I use such knowledge? You will also gain deeper insight into the challenges of ensuring prosperity, safety and sustainability in an increasingly complex world. And you

may come to care about the potential of private, consensus-based processes for making needed rules about emissions, trade, financial reporting, product and worker safety and much more in a world where governments are often unable to do so. Such insight and caring may affect your personal decisions about career choice and volunteer activities.

Class Schedule [week-by-week]

Date	Topic(s) and readings	Assignment(s) Due
Prior to Session1		Read: Session 1 handouts.
Session 1 Date: 2018	<p>Historical perspective and value of standards:</p> <ul style="list-style-type: none"> a. Illustrate with a sampling of standards from antiquity through industrialization, World War II, the post-war decades and the last few decades' revolution in information and communications technology b. Discuss the influence of military specifications to other standards c. Discuss the genesis and advantages of standards for the industrial era d. Present anecdotes on the contributions of Deming, Juran and other leaders in standardization e. Discuss how quality standards led to a proliferation of <i>management system standards</i> (MSS), many of which treat areas that are "normally" in the province of public authorities f. Introduce the case study: <i>International Standards for Environmental Management</i> 	
Prior to Session 2		Read: Session 2 handouts; Text Ch's;
Session 2 Date: 2018	<p>Types of standards, principles and value to society:</p> <ul style="list-style-type: none"> a. Technical standards (mechanical, electrical, Metrical, IT) b. Quality processes (scientific management) c. Product characteristics (medical devices, labeling, LCA, Design, Buildings) d. Management subsystems (Environmental, OSH, Social Responsibility) e. Exemplify with: ISO 9000, 14000, 26000, 50001, 45001, others f. Case study exercise 	Turn in Case Exercise 1.

Date	Topic(s) and readings	Assignment(s) Due
Prior to Session 3		Read: Session 3 handouts;
Session 3 Date: 2018	The U.S. national standards system (I): Private sector <ol style="list-style-type: none"> 1. Players, structure, process, checks and balance 2. ANSI Federation, SDOs, Consortia Groups 3. Case study chapter 	Turn in Case Exercise 2.
Prior to Session 4		Read: Session 4 handouts; Text Ch'r;
Session 4 Date: 2018	The U.S. national standards system (II): Governmental role <ol style="list-style-type: none"> a. NIST, USTR and other Federal agencies b. The National Technology Transfer and Advancement Act (NTTAA) c. The Standards Development Organizations Advancement Act (SDOAA) d. NIST report to the National Science & Technology Council (2011) e. Case study chapter 	Turn in Case Exercise 3.
Prior to Session 5		Read: Session 5 handouts; Text Ch'r;
Session 5 Date: 2018	The International standards system (I) <ol style="list-style-type: none"> a. Players, structure, process (ISO, IEC, CEN/CENELEC, ITU, Country Member Bodies) b. The ISO Technical Management Board c. The ISO Central Secretariat d. Case study chapter 	Turn in Case Exercise 4.
Prior to Session 6		Read: Session 6 handouts; Text Ch'r;
Session 6 Date: 2018	The International standards system (II) <ol style="list-style-type: none"> a. The Vienna Agreement b. Relationships with other international bodies (e.g., WTO, ILO, OECD, UN, Member Bodies and Governments, etc.) c. Representation of interest groups on committees d. Case study chapter 	Turn in Case Exercise 5.

Date	Topic(s) and readings	Assignment(s) Due
Prior to Session 7		Read: Session 7 handouts; Text Ch'r
Session 7 Date: 2018	<p>The mechanics of standardization (I)</p> <ol style="list-style-type: none"> 1. ISO technical committees, subcommittees, work groups (formation, scope of work) 2. National member bodies (e.g., ANSI) and national mirror groups (e.g., USTAGs) 3. Strategic Advisory Groups to ISO (e.g., Strategic Advisory Group on the Environment) 4. Case study chapter 	Turn in Case Exercise 6.
Session 8 Date: 2018	<u>Mid-Term Examination</u>	
Prior to Session 9		Read: Session 9 handouts; Text Ch'r;
Session 9 Date: 2018	<p>The mechanics of standardization (II)</p> <ol style="list-style-type: none"> a. New work item proposals (NWIPs) b. National delegations (delegates, experts, operation and rules) c. Consensus (Definition, how it is achieved in practice) d. Participation in standardization (materially interested parties) e. Case study chapter 	
Prior to Session 10		Read: Session 10 handouts; Text Ch'r
Session 10 Date: 2018	<p>The use of standards (I):</p> <ol style="list-style-type: none"> a. By industry and commercial entities (voluntarily) b. For national governmental purposes (DoD, USEPA, FDA, etc.) c. Case study chapter 	

Date	Topic(s) and readings	Assignment(s) Due
Prior to Session 11		Read: Session 11 handouts; Text Ch'r .
Session 11 Date: 2018	<p>The use of standards (II):</p> <ol style="list-style-type: none"> a. For international governance, arrangements, agreements, protocols b. Federal policy of incorporation by reference into regulations c. Ramifications of incorporation by reference (ramifications for regulation) d. Public policy advancement (e.g., Public-policy partnerships, environmental, health and safety (toy and food, cook stoves), and energy (bio-fuels, electric vehicles, nuclear)) e. Legal uses and issues (copyright, etc.) f. Case study chapter 	
Prior to Session 12		Read: Session 12 handouts; Text Ch'r;
Session 12 Date: 2018	<p>Conformity Assessment (I)</p> <ol style="list-style-type: none"> a. How conformity assessment works separately from standardization b. Accreditation, Certification, Registration c. Structure and entities involved d. Oversight and control nationally and internationally e. Case study chapter 	
Prior to Session 13		Read: Session 13 handouts; Text Ch'r;
Session 13 Date: 2018	<p>Conformity Assessment (II)</p> <ol style="list-style-type: none"> 1. Auditing standards (e.g., ISO 19011) 2. Legitimacy and credibility in conformity assessments 3. Qualification and competence of auditors and course providers 4. CASCO guides for accreditation, certification and auditor competence 5. Case study chapter 	

Date	Topic(s) and readings	Assignment(s) Due
Prior to Session 14		Read: Session 14 handouts; Text Ch'r;
Session 14 Date: 2018	Next Generation Self-Governance a. What is it? b. Enablers (technology, voluntary standards, public awareness and involvement) c. Achieving cultural and operational change in organizations d. Case study chapter	
Session 15 December 15, 2016	<u>Final Examination.</u> The main points in all course sessions will appear on the final examination.	

NOTE: In accordance with university policy, the final exam will be given during the final exam period and not the last week of the semester

Grading

- midterm exam (30%)
- case study exercises (20%),
- final exam (30%)
- class participation/makeups (20%)

Assignments

Specific assignments related to the case study will be made in course sessions.

Assignment	Description	Total Points
Case Exercises	Discussed in multiple sessions	20% of grade
	Total Possible Points	20 out of 100

University Policies

University Policy on Religious Holidays

1. Students should notify faculty during the first week of the semester of their intention to be absent from class on their day(s) of religious observance.
2. Faculty should extend to these students the courtesy of absence without penalty on such occasions, including permission to make up examinations.

3. Faculty who intend to observe a religious holiday should arrange at the beginning of the semester to reschedule missed classes or to make other provisions for their course-related activities

Support for Students outside the Classroom

Disability Support Services (DSS)

Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Rome Hall, Suite 102, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: gwired.gwu.edu/dss/

Mental Health Services 202-994-5300

The University's Mental Health Services offer 24/7 assistance and referral to address students' personal, social, career, and study skills problems. Services for students include: crisis and emergency mental health consultations confidential assessment, counseling services (individual and small group), and referrals. counselingcenter.gwu.edu/

Academic Integrity Code

Academic dishonesty is defined as cheating of any kind, including misrepresenting one's own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information. For the remainder of the code, see: studentconduct.gwu.edu/code-academic-integrity