1-2014

GPHY 421.01: Sustainable Cities

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SUSTAINABLE CITIES

(GPHY 421)

- Spring 2014 -

Class Meets: MWF 12:10-1:00 pm; Location: Health Science 207

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Course Description

Today, more than 50% of the World's population lives in urban environments and this urbanization comes at high environmental costs: a typical city covers only 1% of its ecological footprint, i.e. 99% of its ecological footprint is beyond its city borders. Many cities around the world understood this dilemma and are part of a "green cities" movement that aims to make cities more livable and sustainable.

The course is a discussion of "green" initiative efforts in cities around the world and follows a multi-disciplinary approach by integrating urban-focused concepts from history, sociology, ecology, geography, and architecture and planning. Topics include, for example, the history of cities, occidental and oriental cities, air pollution and climate change, urban sprawl and smart growth, alternative energy, public transportation, waste management, water management, green architecture, environmental and social (in)justice, cultural diversity, and urban forestry and agriculture. We will discuss how "green" cities of today are, and how serious they take the concept of urban sustainability. We will cover examples such as Amsterdam, Auckland, Beijing, Berlin, Chicago, Copenhagen, Curitiba, Portland, San Francisco, Seattle, Singapore, Toronto, Vienna, and Zurich. We will also discuss experiments of sustainable urban design such as Arcosanti, Masdar, and New Urbanism. We will learn that many of the success stories of "greening" the city were actually initiated by grassroots, non-profit, and non-governmental organizations, and by individuals who took the function of responsible citizenship seriously. However, beyond this, we will also learn that the "greening a city" undertaking must root in supporting relationships and interactions between the three fundamental sustainability pillars: social, environmental, and economic.

Facing the problems of current urban environments, we have to find answers to the questions:

- Are cities "livable" places?
- What are the World's "greenest" and most livable cities?
- How can a city become "green"?
- How does the character of the civil society influence the "greening" of a city?
- What are the communitarian foundations for "greening" a city?
- What is the future of our cities?

Goals

The overall course goal is to increase students' knowledge of the special environmental and socio-economic problems that cities in around the globe face, and to develop solution strategies. Critical thinking is important for an objective assessment of past, present, and future developments. Students will learn that only an urban society that is based on communitarian principles is successful in becoming "green" and sustainable. To achieve this, individuals have to take on a responsible citizenship that aims to improve urban live for all. By the end of this course, you should be able to:

1. Identify and discuss topics related to "green" cities around the world.
2. Identify and discuss existing sustainability programs in cities around the world, and evaluate to what degree these cities are serious about their sustainability initiatives.
3. Evaluate multiple perspectives about urban live and urban sustainability by integrating a diverse key of disciplines.
4. Access and evaluate primary literature, identify a study question, collect and analyze data to address the question, and summarize findings in standard formats (written text and oral presentations).
5. Evaluate the work or class peers in a constructive and respectful manner.

Learning Outcomes

1. Demonstrate an understanding of the way how cities can become more livable and sustainable places.
2. Demonstrate an understanding of the way that responsible citizenship makes for a communitarian society, and a communitarian society makes for a more sustainable society.
3. Evaluating ways that help in becoming a responsible local citizen, and a responsible global citizen.

Course Policies

Class Attendance and On-time Appearance

Attendance will be noted. Attendance during the lectures is essential to your general success in class. Excessive lateness disturbs everyone else – please appear on time. You should have your lunch before or after class.

Readings

Portney, K.E. (2013): Taking Sustainable Cities Seriously. Economic Development, the Environment, and Quality of Life in American Cities. – MIT Press, Cambridge, 380 pages.

Siemens AG (2009): European Green City Index. Assessing the Environmental Impact of Europe's Major Cities. Siemens AG, 99 pages.

Siemens AG (2010): Latin America Green City Index. Assessing the Environmental Performance of Latin America's Major Cities. Siemens AG, 99 pages.

Siemens AG (2011): African Green City Index. Assessing the Environmental Performance of Africa's Major Cities. Siemens AG, 91 pages.

Siemens AG (2011): Asian Green City Index. Assessing the Environmental Performance of Asia's Major Cities. Siemens AG, 123 pages.

Siemens AG (2011): US and Canada Green City Index. Assessing the Environmental Performance of 27 Major US and Canadian Cities. Siemens AG, 139 pages.

While you have to purchase the required textbook, the reports by Siemens will be made available on Moodle on time. The scheduled readings will be discussed in class, so please read the assigned text before class in order to be prepared.

Attendance

Attendance is recorded. Class attendance is essential to your success in class. Excessive lateness disturbs everyone else – please appear on time. You should have your lunch before or after class.

Additional Course Material

All additional course material will be made available online through Moodle after the lectures in class. Download and use these resources for your studies in preparation for assignments and exams.

Open Door & Discussion

Please feel free to stop by during office hours or when my door is open to ask any questions you may have regarding the class. Please use this opportunity WHEN NEEDED.

Research Paper and Presentation

Together with two partners you will write a research paper on a specialized topic that matches the main topics of the course (see "Tentative Schedule"). The main body (text) of this research paper is approximately 15 pages long (double-spaced, Times Roman 12, including cover page, table of content, and references) **plus** appendix including figures and tables. **This must be submitted by the due date**. You (and your peer/s) will develop your paper in steps by submitting five "Preparation" assignments: 1 – Reference List 1; 2 – Table of Content; 3 – Reference List 2; 4 – Abstract; 5 – Draft.

Your group will give a class presentation at the end of the term about your topic. The presentation is 15 minutes long followed by a brief discussion.

All work has to be submitted in the two following ways by each group member. **Documents that do not have such file names will be deleted and not counted as submitted documents**.

1. Hard copy of **Microsoft Word, Excel, and/or Powerpoint** documents including all names.
2. Electronic version, uploaded to Moodle. The **document file name** has to follow this structure:
   "referencelist1_yourlastname_yourtopic.docx"
   "tableofcontent_yourlastname_yourtopic.docx
   "referencelist2_yourlastname_yourtopic.docx"
   "abstract_yourlastname_yourtopic.docx"
   "finalpaper_yourlastname_yourtopic.docx"
   "presentation_yourlastname_yourtopic.pptx"

An excellent reading for preparing a research paper is:

Turabian, K.L. (2007): *A Manual for Writers of Term Papers, Theses, and Dissertations*. The University of Chicago Press, Chicago, 436 pages.

Graduate Increment

Graduate students will be required to develop and present a more comprehensive research paper that includes analytical elements coming from techniques learned in the course. The analysis must follow the approach presented in the textbook and answer the question: how seriously does the city of choice take its sustainability initiatives?

Examinations

All three exams will take place in the classroom. They are subjective, not comprehensive; this means that the exam will encompass only the material that is covered in lectures and discussions between exams. In general, each examination will be a combination of multiple choice or, if the class size is small enough, essay questions may be included. The rules for the examinations are as follows:

1. You will take each exam as scheduled. Make-up exams are not allowed—except as listed in the Make-up exam policy below.
2. Material for the exam will be from the required textbook and other readings and all other distributed material. Attendance for each lecture is recommended (and taken) in order that you take notes for each exam.
3. Make-up Exam Policy:
   - All Students must take the final exam as scheduled. Conflicts must be settled with the Dean. This is University Policy and there are no exceptions.
   - All Students must take each exam as scheduled. If an exam is missed, the student will receive a zero (0) on the exam.
   - These are the only exceptions that will warrant a make-up exam: university events—such as sporting or music events; military obligations; religious holidays; serious family emergency; medical emergencies or serious illness; court-imposed legal obligations such as subpoenas or jury duty; serious weather conditions; special curricular requirements such as judging trips or field trips.
   - Any student requiring an exception under this policy must do so **prior** to the scheduled exam—unless in the case of an actual emergency (sudden hospitalization). A student must provide official documentation of the reason for absence **in advance**.
   - If a make-up exam is approved. It must be completed within one week of the original exam and scheduled with the Teaching Assistant.

Accommodations

Students with disabilities who need assistance should contact the instructor immediately so that necessary forms and procedures can be completed. Please review the university's website if there are any questions: http://www.umt.edu/dss/default.htm.

Academic Integrity

"All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at: http://life.umt.edu/vpsa/student_conduct.php."

Work Evaluation and Final Grading

Three exams (50 points each)	150 points
Six Research Paper Preparation Assignments (25 points each)	150 points
Research Paper (Final Version)	100 points
Presentation	100 points
Class Attendance	100 points
Total Points	**600 points**

Grading Scheme

97-100	A+	87-89	B+	77-79	C+	67-69	D+	<60	F
93-96	A	83-86	B	73-76	C	63-66	D		
90-92	A-	80-82	B-	70-72	C-	60-62	D-		

Missed Classes

0-3	A
4	B
5	C
6	D
>6	Expulsion from Class

Late assignments will be penalized. An assignment that is turned in one day late will have 10% of the available points deducted from the score. An assignment that is turned in two days late will have 20% of the available points deducted from the score. No credit will be awarded for assignments that are more than two days late. "Day" denotes a business day (Monday through Friday) not the time interval between class meetings. For example, an assignment that is due on Thursday but turned in on Monday will be counted two days late.

Tentative Schedule

Date	Topic	Other
WEEK 1		
27-Jan	Introduction to the Course	
29-Jan	Lecture: Sustainability Concepts Reading Discussion: Textbook Chapter 1 – Conceptual Framework	
31-Jan	Lecture: Global Urbanization	Submit Topic Preference
WEEK 2		
03-Feb	Lecture: The History of Cities	
05-Feb	Reading Discussion: Textbook Chapter 2 – Measuring Sustainability Team Meeting	
07-Feb	Lecture: Transportation	
WEEK 3		
10-Feb	Guest Lecture: Bob Giordano (Missoula Institute for Sustainable Transportation)	
12-Feb	Movies: The Suzuki Diaries – Copenhagen (Bikes), Madrid (Trains) Reading Discussion: Textbook Chapter 3 – Environment, Energy and Sustainability	
14-Feb	Movie: Understanding Urban Sprawl	Submit Reference List 1
WEEK 4		
17-Feb	**Holiday: President's Day**	**No Class**
19-Feb	Lecture: Urban Sprawl and Smart Growth	
21-Feb	Movie: Design e^2 – Amsterdam (Residential Reuse) Reading Discussion: Textbook Chapter 4 – Growth vs. Smart Growth	
WEEK 5		
24-Feb	Lecture: Noise and Visual Pollution	
25-Feb	Lecture: Climate and Air Pollution Reading Discussion: Textbook Chapter 5 – Communitarian and Participatory Foundations	
27-Feb	Guest Lecture: Cherie Peacock (UM, Greening UM)	Submit Table of Content
WEEK 6		
03-Mar	**Exam 1**	
05-Mar	Guest Lecture: Kevin McManigal (UM, Geography: Living Off the Grid)	
07-Mar	Lecture: Energy Movie: The Suzuki Diaries – Denmark (Wind Energy), Spain (Solar Energy)	
WEEK 7		
10-Mar	Lecture: Water (Chicago)	
12-Mar	Guest Lecture: David Shively (UM, Geography: Sustainable Water Use in Montana)	
14-Mar	Movie: Design e^2 – New York (Affordable Green Housing) Reading Discussion: Textbook Chapter 6 – Equity and Justice	Submit Reference List 2
WEEK 8		
17-Mar	Lecture: Waste (Chicago and Berlin)	
19-Mar	Lecture: Urban Forestry (Green Belts United Kingdom)	
21-Mar	Movie: Design e^2 – Cairo (Greening Efforts) Reading Discussion: Textbook Chapter 7 – Sustainability Policies	

WEEK 9		
24-Mar	Reading Discussion: Green City Index – Latin America Lecture: Brasilia	
26-Mar	Movie: Sustainable Urban Living (Curitiba) (25 min) Reading Discussion: Textbook Chapter 11 – Correlational Patterns	
28-Mar	Movie: Design e² – Bogota (Sustainable Urban Planning) Reading Discussion: Textbook Chapter 12 – Summary and Conclusion	Submit Abstract
WEEK 10		
31-Mar	**Spring Break**	**No Class**
02-Apr	**Spring Break**	**No Class**
04-Apr	**Spring Break**	**No Class**
WEEK 11		
07-Apr	Reading Discussion: Green City Index – Europe Movie: The Suzuki Diaries – Berlin (Energy)	
09-Apr	Guest Lecture: Chase Jones (City of Missoula, Office of Planning and Grants)	
11-Apr	**Exam 2**	
WEEK 12		
14-Apr	Reading Discussion: Green City Index – Asia Movie: Design e² – China (Sustainable Design)	
16-Apr	Reading Discussion: Green City Index – Africa Reading Discussion: Green City Index – U.S. and Canada	
18-Apr	Lecture: Future Cities (Arcosanti, Dubai, Masdar)	Submit Draft
WEEK 13		
20-Apr	Student Presentations: (1) New York, (2) Los Angeles	
22-Apr	Student Presentations: (3) Chicago, (4) Houston	
25-Apr	Student Presentations: (5) Philadelphia, (6) San Francisco	
WEEK 14		
28-Apr	Student Presentations: (7) Seattle, (8) Portland	
30-Apr	Student Presentations: (9) Denver, (10) Albuquerque	
02-May	Student Presentations: (11) Austin, (12) Jacksonville	
WEEK 15		
05-May	Student Presentations: (13) Boston, (14) Boulder	
07-May	Student Presentations: (15) Santa Monica, (16) Chattanooga	
09-May	Student Presentations: (17) TBA, (18) TBA	Submit Paper + PPT
WEEK 16		
13-May	**Exam 3, 10:10 am – 12:00 pm**	

Potential Readings

(Only excerpts will be assigned rather than entire books).

Abrahamson, M. (2004): *Global Cities*. Oxford University Press, 179 pages.

Aguado, E. and Burt, J.E. (2004): *Understanding Weather and Climate*. Prentice Hall, 560 pages.

- Chapter 14: Human Effects. Air Pollution and Heat Islands (Pages 424-444).

Barnett, J. (2011): *City Design. Modernist, Traditional, Green and Systems Perspectives*. Routledge, 248 pages.

Beatley, T. (2005): *Native to Nowhere. Sustaining Home and Community in a Global Age*. Island Press, 408 pages.

Bealtey, T. (2010): *Biophilic Cities. Integrating Nature into Urban Design and Planning*. Island Press, 208 pages.

Benfield, F.K., Terris, J. and Vorsanger, N. (2001): *Solving Sprawl. Models of Smart Growth in Communities Across America*. Natural Resource Defense Council, 200 pages.

Botkin, D.B. and Keller, E.A. (2003): *Environmental Science. Earth as a Living Planet*. Wiley, 668 pages.

- Chapter 27: Urban Environments (Pages 575-597).

Brunn, S.D., Hays-Mitchell, M. and Zeigler, D.J. (2008): *Cities of the World. World Regional Urban Development*. Rowman & Littlefield, 647 pages.

Bullard, R.D., Johnson, G.S. and Torres, A.O. (2000): *Sprawl City. Race, Politics, and Planning in Atlanta*. – Island Press, 236 pages.

Calthorpe, P. (2010): *Urbanism in the Age of Climate Change*. Island Press, 176 pages.

Chapin, R. and Susanka, S. (2011): *Pocket Neighborhoods. Creating Small-scale Community in a Large-scale World*. Taunton Press, 224 pages.

Charlesworth, E. and Adams, R. (2011): *The EcoEdge. Urgent Design Challenges in Building Sustainable Cities*. Routledge, 216 pages.

Cherry, N. and Nagle, K. (2009): *Grid/Street/Place. Essential Elements of Sustainable Urban Districts*. American Planning Association, 200 pages.

Colten, C. (2005): *An Unnatural Metropolis. Wresting New Orleans from Nature*. Louisiana State University Press, ? pages.

Condon, P.M. and Yaro, R. (2010): *Seven Rules for Sustainable Communities. Design Strategies for a Post-carbon World*. Island Press, 216 pages.

Coyle, S.J. and Duany, A. (2011): *Sustainable and Resilient Communities. A Comprehensive Action Plan for Towns, Cities, and Regions*. Wiley, 416 pages.

Cullingworth, B. and Caves, R.W. (2003): *Planning in the USA. Policies, Issues and Processes*. Routledge, 354 pages.

Detwyler, T.R. and Marcus, M.G. (1972): *Urbanization and Environment. The Physical Geography of the City*. Duxbury, 287 pages.

Duany, A., Plater-Zyberk, E. and Speck, J. (2010): *Suburban Nation. The Rise of Sprawl and the Decline of the American Dream*. North Point Press, 320 pages.

Duany, A., Speck J. and Lydon, M. (2009): *The Smart Growth Manual*. McGraw-Hill, 240 pages.

Dunham-Jones, E. and Williamson, J. (2011): *Retrofitting Suburbia. Urban Design Solutions for Redesigning Suburbs*. Wiley, 211 pages.

Enger, E.D. and Smith, B.F. (2002): *Environmental Science. A Study of Interrelationships*. McGraw-Hill, 486 pages.

- Chapter 13: Land-Use Planning (Pages 269-288).

Exline, C.H., Peters, G.L. and Larkin, R.P. (1982): *The City. Patterns and Processes in the Urban Ecosystem.* Westview, 340 pages.

Farr, D. (2007): *Sustainable Urbanism. Urban Design with Nature.* Wiley, 304 pages.

Forman, R.T.T. (2008): *Urban Regions. Ecology and Planning Beyond the City.* Cambridge University Press, 432 pages.

Gehl, J. (2010): *Cities for People.* Island Press, 288 pages.

Glaeser, E.L. (2011): *Triumph of the City. How Our Greatest Invention Makes Us Richer, Smarter, Greener, Healthier, and Happier.* Pengiun Press, 352 pages.

Hanson, S. and Giuliano, G. (2004): *The Geography of Urban Transportation.* The Guilford Press, 419 pages.

Harnik, P. Bloomberg, M.M. (2010): *Urban Green. Innovative Parks for Resurgent Cities.* Island Press, 208 pages.

Hartshorn, T.A. (1992): *Interpreting the City. An Urban Geography.* Wiley & Sons, 484 pages.

- Chapter 6: The Urban Physical Environment (Pages 97-118).
- Chapter 9: Transportation Processes (Pages 157-199).
- Chapter 19: Planning, Regulation, and the Future (Pages 445-471).

Hayden, D. (2003): *Building Suburbia. Green Fields and Urban Growth 1820-2000.* Random House, 318 pages.

Holtz Kay, J. (1997): *Asphalt Nation. How the Automobile Took Over America and How We Can Take it Back.* University of California Press, 418 pages.

Hubbard, P. (2006): *City.* Routledge, 298 pages.

Jacobs, J. (1961): *The Death and Life of Great American Cities.* Random House, 458 pages.

Kaplan, D.H., Wheeler, J.O. and Holloway, S.R. (2004): Urban Geography. John Wiley & Sons, 484 pages.

Kellogg, S., Pettigrew, S. and Martinez J. (2008): *Toolbox for Sustainable City Living. A Do-it-Ourselves Guide.* South End Press, 242 pages.

Knox, P.L. and McCarthy, L. (2005): *Urbanization. In Introduction to Urban Geography.* Prentice Hall, 436 pages.

Langdon, P. (1997): *A Better Place to Live. Reshaping the American Suburb.* University of Massachusetts Press, 270 pages.

Lynch, K. (1960): *The Image of the City.* MIT Press, 194 pages.

McManus, P. (2004): *Vortex Cities to Sustainable Cities. Australia's Urban Challenge.* University of New South Wales Press, 240 pages.

Miller, G.T. (2004): *Living in the Environment. Principles, Connections, and Solutions.* Thomson Learning, 757 pages.

- Chapter 25: Sustainable Cities. Urban Land Use and Management (Pages 660-688).

Mostafavi, M. and Doherty, G. (2010): *Ecological Urbanism.* Lars Mueller Publishers, 656 pages.

Mumford, L. (1961): *The City in History. Its Origins, Its Transformations, and Its Prospects.* Harcourt, 657 pages.

Ness, G.D. and Low, M.M. (2000): Five Cities. Modelling Asian Urban Population-Environment Dynamics. Oxford University Press, 311 pages.

Neuwirth, R. (2004): *Shadow Cities. A Billion Squatters, a New Urban World.* Routledge, 352 pages.

Newman, P. and Jennings, I. (2008): *Cities as Sustainable Ecosystems. Principles and Practices.* Island Press, 296 pages.

Newman, P., Bealtey, T. and Boyer, H. (2009): *Resilient Cities. Responding to Peak Oil and Climate Change.* Island Press, 184 pages.

Owen, D. (2009): *Green Metrolopis. Why Living Smaller, Living Closer, and Driving Less are the Keys to Sustainability.* Riverhead, 368 pages.

Padayachee, V. and Freund, B. (2002): *(D)Urban Vortex. South African City in Transition*. University of Natal Press, 345 pages.

Portney, K.E. (2004): *Taking Sustainable Cities Seriously. Economic Development, the Environment, and Quality of Life in American Cities*. MIT Press, 284 pages.

Pugh, C. (2000): *Sustainable Cities in Developing Countries*. Earthscan, 273 pages.

Register, R. (2006): *EcoCities. Rebuilding Cities in Balance with Nature*. New Society Publisher, 368 pages.

Ritchie, A. and Thomas, R. (2009): *Sustainable Urban Design. An Environmental Approach*. Taylor & Francis, 256 pages.

Rogers, R. (1997): *Cities for a Small Planet*. Westview Press, 180 pages.

Roseland, M. and Mitchell, S. (2005): *Toward Sustainable Communities. Resources for Citizens and Their Governments*. New Society Publishers, 256 pages.

Rybczynski, W. (2010): *Makeshift Metropolis. Ideas About Cities*. Scribner, 256 pages.

Sarte, S.B. (2010): *Sustainable Infrastructure. The Guide to Green Infrastructure and Design*. Wiley, 384 pages.

Singer, M.J. and Munns, D.N. (2002): *Soils. An Introduction*. Prentice Hall, 429 pages.

- Chapter 16: Nonagricultural Uses of Soils (Pages 374-394).

Satterthwaite, D. (1999): *The Earthscan Reader in Sustainable Cities*. Earthscan, 472 pages.

Tachieva, G. (2010): *Sprawl Repair Manual*. Island Press, 304 pages.

Thadani, D.A., Dunay, A. and Krier, L. (2010): *The Language of Towns and Cities*. Rizzoli, 804 pages.

United Nations (?): *Energy Savings in Cities. Issues, Strategies and Options for Governments*. United Nations, 202 pages.

United Nations (2006): *Sustainable Cities. Japanese Perspective on Physical and Social Structures*. United Nations, 312 pages.

United Nations (2008): *State of the World's Cities 2008-2009.Harmonious Cities*. Routledge, 280 pages.

United Nations (2009): *Global Report on Human Settlements 2009. Planning Sustainable Cities*. United Nations, 336 pages.

United Nations (2010): *State of the World's Cities 2010-2011. Bridging the Urban Divide*. United Nations, 240 pages.

United Nations (2010): *The State of African Cities 2010. Governance, Inequality and Urban Land Markets*. United Nations, ? pages.

United Nations (2011): *Global Report on Human Settlements 2011. Cities and Climate Change*. United Nations, 304 pages.

United Nations (2011): *The State of Asian Cities 2010-2011. Bridging the Urban Divide*. United Nations, 240 pages.

Walker, B., Salt, D. and Reid, W. (2006): *Resilience Thinking. Sustaining Ecosystems and People in a Changing World*. Island Press, 192 pages.

Wheeler, S.M. and Beatley, T. (2008): *Sustainable Urban Development Reader*. Routledge, 512 pages.

Internet Sources

http://www.ibm.com/smarterplanet/us/en/smarter_cities/overview/index.html?csr=agus_ibmcities_2012331&cm=k&cr=google&ct=USBRB301&S_TACT=USBRB301&ck=urban_population_growth&cmp=USBRB&mkwid=s3XXteAeX_10310730042_432g5616337

http://www.newgeography.com/best-cities-job-growth-2012