



ES/SO 360 DESIGNING THE SUSTAINABLE CITY

IES Abroad Granada

DESCRIPTION:

Today, around 56% of the world's population - 4.4 billion people - live in cities. This trend is expected to continue and the urban population is expected to more than double its current size by 2050, by which time around 70% of the population will be urban dwellers. Eighty percent of the world's GDP and more than 60% of greenhouse gas emissions are generated in cities, at the cost of using 78% of the planet's resources. In this sense, urbanization plays a leading role in terms of sustainable development, as it is innovative cities that are leading the response to the crisis of climate change and resource depletion, developing sustainable, resilient, and equitable living models through policies and actions that are more responsible with the communities that inhabit the urban environment.

In the current context, the acceleration of the effects of climate change has exacerbated existing environmental problems in the Mediterranean Basin. Experts estimate that between 75% and 80% of the Spanish territory could be desert areas by the end of the century if no measures are taken.

This course explores the principles and practices of sustainable urban design with a focus on creating livable and environmentally friendly cities. Through a combination of theory, case studies, and field trips, students will develop a comprehensive understanding of how to design cities that are socially inclusive, economically viable, and environmentally responsible. We will analyze key challenges in the city of Granada and work in groups to propose innovative solutions based on the Sustainable Development Goals (SDGs). Team collaboration and the use of technology will be encouraged to design and develop proposals to address an urban sustainability problem in the city of Granada.

CREDITS: 3

HOURS: 45

LANGUAGE: Spanish

PREREQUISITES: None

ADDITIONAL COST: None

METHODOLOGY:

In this course, we diagnose and examine the most relevant or critical challenges, problems, and areas of the city of Granada. Students will work in small groups to design innovative proposals within the SDG framework, which offer solutions to the challenges they have identified at the local level, taking into account Granada's environmental, historical, social, and economic aspects.

Thus, guided by professors and experts, the student groups will take advantage of field visits to contact local entities that will allow the students to have diverse approaches and perspectives, and gather data and information to develop

their projects. They will make full use of technology to professionalize themselves by working in teams and sharing their experience and findings with their peers, and the problem-based learning will culminate with each team delivering a proposal to address an urban sustainability problem in Granada. The following resources will be used:

- Classes: mostly face-to-face at IES Granada.
- Group projects: each group will make presentations on the projects they have designed. Students will give feedback to each other.
- Moodle forums: students are expected to participate in the forums indicated in Moodle.
- Moodle materials: key readings, videos, and online resources designed to deepen understanding of the subject matter and encourage class participation.
- Collaboration and discussion in class: most classes will be devoted to collaborative work, e.g., discussions and presentations.
- Field visits: to share visions of concrete sustainability experiences.

REQUIRED WORK AND FORM OF EVALUATION

- **Individual Assignments - 35%.**
 - Assignment 1 (10%): "What SDGs are involved in designing the sustainable city?".
 - Assignment 2 (15%): Analysis of the "Charter for the ecosystemic planning of cities".
 - Assignment 3 (10%): Essay "What are the environmental challenges for urban sustainability?".
- **Group Assignment: Collaborative project - 45%.**
 - Assignment 1 (10%): Identification of the main sustainability problems in Granada.
 - Assignment 2 (10%): Comprehensive Analysis and Diagnosis of the challenges posed by sustainable urban planning in Granada.
 - Assignment 3 (25%): Presentation of projects
- **Participation - 20%.** Students must be committed to assigned work and actively participate in both team activities and discussions.

Participation

Participation is essential in this course. Students must engage with the assigned materials and actively participate in both their team activities and class discussions. Students will be given a general participation rubric (Annex on the last page). The student's native language will be taken into account, so a reflective attitude, intention, and proactive interest will be essential.

Productive participation requires preparation, careful attention, and respectful and assertive communication skills. When criticism is exercised, it should be constructive. It does not mean bragging, monopolizing the microphone, or making unsubstantiated claims.

Group Assignments

Students will be divided into teams that will participate in a series of assignments, each of which will require them to examine a situation or proposal from the presentations and visits and offer a solution or commentary, according to the instructions given. The assignments will consist of identifying a key sustainability issue in the host city and designing a project to address it. Teams will report on their responses to these assignments throughout the semester. At the end of the course, each team will make a presentation of their final design. Assignments will be guided by faculty in a tiered



fashion. Rubrics will be provided that will leave room for originality and creativity to guide students in the completion of their assignments. Grades will be based on the clarity and creativity of solutions, but also on the ability of teams to work together and exchange ideas. Collaboration and the adaptation of other teams' ideas to the local context will be positively valued.

LEARNING OUTCOMES:

At the end of the course, students will be able to:

- Recognize the complexity and interrelatedness of environmental challenges and the actions needed to promote local sustainability.
 - Understand that sustainability has a holistic nature and that it must be approached from an integral perspective, recognizing and explaining the complexity and interrelation of its components.
 - Identify the main sustainability issues in the local context.
 - Identify key drivers of change in sustainability initiatives.
- Understand global environmental issues, their linkages, and relevance at the local scale.
 - Analyze examples of success and failure in the field of sustainable urban planning.
 - Compare and critique the sustainability policies of different locations.
- Define and narrow down a complex problem to develop a proposal for action.
 - Be familiar with concepts and tools of urban design from an Environmental Justice perspective.
 - Work in teams fostering a professionalized and healthy environment.
 - Manage systems and tools for identification and prospection, indicators, and project management.
 - Differentiate between realistic and unrealistic targets for sustainability solutions.
 - Learn from other teams' problem-solving experiences.
- Be able to apply the lens of responsible individuals in their day-to-day lives.

ATTENDANCE POLICY:

Regular class attendance is mandatory, which allows the students to take full advantage of the course. Only 1 unexcused absence is allowed. All absences of 1 or more will have a negative impact on the student's final grade, which will be lowered by one grade (e.g. from B+ to B) by each additional absence. Tardiness of more than 5 minutes will be noted. Every 3 delays of 5-15 minutes will equal 1 absence. Delays of more than 15 minutes will equal 1 absence.

COURSE AND CLASS STRUCTURE:

- The course consists of 13 sessions over 13 weeks. There will be one 3-hour session per week, which may, on occasion, be extended to 4 hours, depending on travel and needs.
- Most of the sessions are conducted in a hybrid way, between the classroom and the city.

CONTENTS:

Session	Contents	Assignments/activities/readings
1	<ul style="list-style-type: none"> Course Orientation Culture, ideology, and climate change <ul style="list-style-type: none"> Mediterranean cities, historically sustainable and resilient. Cultural and environmental history of Granada The three pillars: Basic notions for approaching sustainability <ul style="list-style-type: none"> SDG Plan (SDGs) 	<ul style="list-style-type: none"> Course review Didactic Itinerary "Get to know your Landscape" through a route through San Miguel Alto Naciones Unidas, Departamento de Economía y Asuntos Sociales, Objetivos y Metas de Desarrollo Sostenible Chelleri L. and Olazabal M. (eds.) 2012. <i>Multidisciplinary perspectives on urban resilience: a workshop report</i>, Bilbao: Basque Centre for Climate Change, Chapter 1, "Why Urban Resilience?", pp 7-19. Fedkin, Mark V., "Sustainability, Definitions", in Technologies for Sustainable Systems, Department of Energy and Mineral Engineering, PSU. McKay, David J.C., "Sustainable Energy Without the Hot Air", UIT, Cambridge, Chapter 15, "Stuff", 2009
2	<ul style="list-style-type: none"> Cities in the Anthropocene: Urban systems, climate, resilience, and sustainability. Cities, climate, and sustainability <ul style="list-style-type: none"> SBN and Biocultural Landscape Environmental challenges for urban sustainability 	<ul style="list-style-type: none"> Individual Assignment 1: Which SDGs are involved in designing for a sustainable city? Didactic Itinerary "Cities, climate and sustainability in the Alhambra Forest". Terrades, J. y Rueda, S. El libro verde de medio urbano en el ámbito de la biodiversidad. Capítulo del Libro Verde de Sostenibilidad Urbana y Local en la Era de la Información. Ed. Ministerio de Agricultura, Alimentación y Medio Ambiente, 2012. Krueger, E.H., Constantino, S.M., Centeno, M.A. et al. "Governing sustainable transformations of urban social- ecological-technological systems." npj Urban Sustain 2, 10 (2022). Borgström, S. T., T. Elmqvist, P. Angelstam, and C. Alfsen- Norodom. 2006. "Scale mismatches in management of urban landscapes. Ecology and Society" 11(2): 16. Berners-Lee, M., 2010, "<i>How Bad are Bananas, The Carbon Footprint of Everything</i>", Green Profile, pp 7-14, 28-29, 32-33, 145-148. Ernstson, H., van der Leeuw, S.E., Redman, C.L. et al. "Urban Transitions: On Urban Resilience and Human-Dominated Ecosystems." AMBIO 39, 531-545 (2010).

Session	Contents	Assignments/activities/readings
3	<ul style="list-style-type: none"> Global paradigm, local action: examples of modern cities prioritizing sustainability Urban challenges of main touristic destinations 	<ul style="list-style-type: none"> Educational tour "Are we tourists or travelers?" through the historic center of Granada Workshop "Modern challenges of a medieval city". Ehrlich PR, "The MAHB, the Culture Gap, and Some Really Inconvenient Truths." PLoS Biol 8(4), 2010. Hauser, O. P., Hendriks, A., Rand, D. G., & Nowak, M. A., "Think global, act local: Preserving the global commons," 2016. (concentrate on the Abstract)
4	<ul style="list-style-type: none"> Socioeconomic Challenges for Urban Sustainability <ul style="list-style-type: none"> Social dimension of sustainability, intersectionality Environmental and climate justice The role of economics in the race to urban sustainability 	<ul style="list-style-type: none"> Didactic Itinerary "Know your city", to get closer to the reality of urban contexts in exclusion: guided route through the North zone of the hand of the Almanjáyar en Familia Association (ALFA). Eizenberg, Efrat, and Yosef Jabareen, "Social Sustainability: A New Conceptual Framework" Sustainability 9, no. 1: 68. 2017. Crenshaw, K. "The urgency of intersectionality" TEDWomen, 2016.
5	<ul style="list-style-type: none"> Collaborative project design <ul style="list-style-type: none"> Diagnostic tools for the evaluation and strategic planning of urban sustainability projects with an integrated approach (economic, social, environmental, cultural, and institutional). Team management and collaborative work methodologies: Agile Possibilities for public funding in the framework of European projects 	<ul style="list-style-type: none"> Introduction to the principles of the problem-based method for understanding social innovation and creative thinking. Forming teams. Comprehensive Analysis and Diagnosis of the challenges posed by sustainable urban planning in Granada. Introduction to the Agile digital environment Introduction to the European project framework Brown, L. R., "Can We Mobilize Fast Enough?" and "Designing Cities for People" In Plan B 4.0: Mobilizing to Save Civilization, Norton, W. W. & Company, Inc. (Ch. 10, p.143-167), 2009.

Session	Contents	Assignments/activities/readings
6	<ul style="list-style-type: none"> • Designing for sustainability: introduction to urban design thinking. • Management of sustainability indicator systems. • The value of architecture for the rehabilitation and regeneration of the city • Examples of good practices of sustainable architecture in Andalusia 	<ul style="list-style-type: none"> • Individual Assignment 2: Analysis of Rueda, S., "Carta para la Planificación ecosistémica de las ciudades". pps. 1-67. Ecología Urbana, Icaria Editorial, 2022. • Conference "Sustainable Architecture and Conservation of Heritage Spaces" at the architectural firm AMAT Arquitectos. • De Bono, Edward, Serious Creativity. The Journal for Quality and Participation, 18, 12-18, 1995. • Manzini, E., Online Lecture. "Design, When Everybody Designs. An Introduction to Design for Social Innovation", 2015.
7	<ul style="list-style-type: none"> • Bioregional approach to the climate emergency and energy and material shortages: the Granada bioregion <ul style="list-style-type: none"> • Urban sprawl and new forms of development • poverty • Rights of the natural world • Sustainability policies from the University of Granada • Projects Design: the structure for projects development. <ul style="list-style-type: none"> • Start with why • Diagnosis and Needs research 	<ul style="list-style-type: none"> • Group Assignment 1: Identification of the main sustainability issues in Granada. • Conference "The bioregion of Granada" and discussion • Yacamán, C., Matarán Ruiz, A., Mata Olmo, R., Macías Figueroa, A., and Torres Rodríguez, A. "Peri-Urban Organic Agriculture and Short Food Supply Chains as Drivers for Strengthening City/Region Food Systems-Two Case Studies in Andalucía, Spain". Land Vol. 9, no. 6, pp. 177. 2020. • Massey, Justine Marrion, "Climate Change, Culture and Cultural Rights", OHCHR, pps.4-5, 20-45. 2020. • Estrategia de Desarrollo Humano Sostenible de la UGR
8	<ul style="list-style-type: none"> • Local policies in sustainable urbanism <ul style="list-style-type: none"> • Strategic urban vision for local development • Project management in the field of sustainability • Facilities and urban mobility • Vulnerability, integration, and participation. • Projects Design: <ul style="list-style-type: none"> • How and what will we do it? 	<ul style="list-style-type: none"> • Conference "Sustainable urban planning projects for the city of Granada". • Workshop "Creativity and Ideas Funnel". • Discussion forum on diagnosis and proposals • Granada: Estrategia Ciudad Sostenible 2020. Haciendo humano lo urbano • Spotswood, E.; Grossinger, R.; Hagerty, S.; Bazo, M.; Benjamin, M.; Beller, E.; Grenier, L.; Askevold, R. A. "Making Nature's City." SFEI Contribution No. 947. San Francisco Estuary Institute: Richmond, CA. 2019.

Session	Contents	Assignments/activities/readings
9	<ul style="list-style-type: none"> Sustainable and Supportive Communities 	<ul style="list-style-type: none"> Visit to Fundación Escuela de Solidaridad Paul Pholeros TEDxSydney - May 2013 How to reduce poverty? Fix homes Diversity.social, "Social Sustainability, Everything You Need to Know".
10	<ul style="list-style-type: none"> Gender, migration, and poverty in the urban context <ul style="list-style-type: none"> Analyzing and addressing gender inequalities and poverty to create more inclusive, safe, and equitable urban systems for all people, regardless of their background, ethnicity, gender, or social status. 	<ul style="list-style-type: none"> Conference "Urbanism from a gender perspective". Debate forum: how can we generate viable, inclusive, accessible, and sustainable urban models through citizen participation? Subirats, J. Quintana, I. Vidal, M. y Rueda, S. El libro verde de medio urbano en el ámbito de la Sostenibilidad social: hábitat urbano e inclusión social. Pps. 453-493. Capítulo del Libro Verde de Sostenibilidad Urbana y Local en la Era de la Información. Ed. Ministerio de Agricultura, Alimentación y Medio Ambiente, 2012.
11	<ul style="list-style-type: none"> Interactions between the community, the environment, and the economy in the urban context. Urban green spaces. <ul style="list-style-type: none"> Ecosystem services. Importance of soil and food sovereignty. Experiences of urban agroecology and local food systems. Policy and regulation, economic and financing aspects, and resource management. Projects Design Session: who will be the target group? 	<ul style="list-style-type: none"> Field trip to learn about the "Huerta de las Flores del Abuelo Cebolleta" initiative. Documentary "Kiss the Ground".
12	<ul style="list-style-type: none"> Urbanism and Universal Accessibility <ul style="list-style-type: none"> We will get to know the city through experience, we will put ourselves in the shoes of people with disabilities and we will learn about the challenges of universal accessibility to achieve inclusion. 	<ul style="list-style-type: none"> Individual Assignment 3: Essay "What are the environmental challenges for urban sustainability"? Workshop "Putting ourselves in the shoes of a person with a disability". Zivarts, Anna, "The '15-Minute-City' isn't made for disabled bodies," Bloomberg CityLab, April 2021.

Session	Contents	Assignments/activities/readings
13	<ul style="list-style-type: none"> • Addressing the variety of ideas, solutions, and content of projects • Review and revision of course content • Reflection and evaluation of learning 	<ul style="list-style-type: none"> • Group Assignment 3: Presentation of projects • Closing of the course in the form of a debate to ground ideas, knowledge, and experiences in their different urban realities.

FIELD TRIPS AND VISITS RELATED TO THE COURSE:

Students will visit various locations and institutions with leading projects related to sustainability and meet with experts in different fields.

- **Session 1:** Educational Itinerary "Know your Landscape" through a route through the Albaicín neighborhood until reaching San Miguel Alto to see the distribution of the city and perceive differences in population concentration.
- **Session 2:** Didactic Itinerary "Cities, climate and sustainability in the Alhambra Forest", to understand the importance of Nature-Based Solutions and the environmental challenges for urban sustainability.
- **Session 3:** Educational itinerary "Are we tourists or travelers?" through the historic center of Granada and the neighborhoods of Realejo and Albaicín to analyze the urban challenges of heritage tourism destinations.
- **Session 4:** Didactic Itinerary "Know your city", a guided tour through the northern area by the Asociación Almanjáyár en Familia (ALFA) to approach the reality of urban contexts in exclusion and to learn about the socioeconomic challenges of Granada from an inclusive perspective.
- **Session 6:** Visit the architectural firm AMAT Arquitectos to hear firsthand the challenges of sustainable architecture in Granada through real examples of sustainable architectural intervention by this studio.
- **Session 9:** We will learn first-hand about the history of Fundación Escuela de Solidaridad, connect with the community, and have the opportunity to apply and contextualize academic concepts in a real environment.
- **Session 11:** Field trip to learn about the initiative "Huerta de las Flores del Abuelo Cebolleta", in Cenes de la Vega. We will appreciate the interactions between the community, the environment, and the economy in the urban context to understand the importance of food sovereignty and the uses and care of the soil.
- **Session 12:** Workshop in the classroom and through Sacromonte to learn about the challenges of universal accessibility.

BIBLIOGRAPHY

REQUIRED READINGS

- Berners-Lee, M., 2010, "How Bad are Bananas, The Carbon Footprint of Everything", Green Profile, pp 7-14, 28-29, 32-33, 145-148.
- Borgström, S. T., T. Elmqvist, P. Angelstam, and C. Alfsen- Norodom. 2006. "[Scale mismatches in management of urban landscapes. Ecology and Society](#)" 11(2): 16.
- Brown, L. R., "[Can We Mobilize Fast Enough?](#)" and "[Designing Cities for People](#)" In Plan B 4.0: Mobilizing to Save Civilization, Norton, W. W. & Company, Inc. (Ch. 10, p.143-167), 2009.
- Chelleri L. and Olazabal M. (eds.) 2012. *Multidisciplinary perspectives on urban resilience: a workshop report*, Bilbao: Basque Centre for Climate Change, Chapter 1, "[Why Urban Resilience?](#)", pp 7-19.
- Crenshaw, K. "[The urgency of intersectionality](#)" | TEDWomen, 2016.
- De Bono, Edward, [Serious Creativity. The Journal for Quality and Participation](#), 18, 12-18, 1995.
- Diversity.social, "[Social Sustainability, Everything You Need to Know](#)".
- Documentary "[Kiss the Ground](#)".
- Ehrlich PR, "[The MAHB, the Culture Gap, and Some Really Inconvenient Truths.](#)" PLoS Biol 8(4), 2010.
- Eizenberg, Efrat, and Yosef Jabareen, "[Social Sustainability: A New Conceptual Framework](#)" Sustainability 9, no. 1: 68. 2017.
- Ernstson, H., van der Leeuw, S.E., Redman, C.L. et al. "[Urban Transitions: On Urban Resilience and Human-Dominated Ecosystems.](#)" AMBIO 39, 531-545 (2010).
- Fedkin, Mark V., "[Sustainability, Definitions](#)", in Technologies for Sustainable Systems, Department of Energy and Mineral Engineering, PSU.
- [Granada: Estrategia Ciudad Sostenible 2020. Haciendo humano lo urbano](#)
- Hauser, O. P., Hendriks, A., Rand, D. G., & Nowak, M. A., "[Think global, act local: Preserving the global commons](#)," 2016. (concentrate on the Abstract)
- Krueger, E.H., Constantino, S.M., Centeno, M.A. et al. "[Governing sustainable transformations of urban social-ecological-technological systems.](#)" npj Urban Sustain 2, 10 (2022).

- Manzini, E., Online Lecture. "[Design, When Everybody Designs. An Introduction to Design for Social Innovation](#)", 2015.
- Massey, Justine Marrion, "[Climate Change, Culture and Cultural Rights](#)," OHCHR, pps.4-5, 20-45. 2020.
- McKay, David J.C., "[Sustainable Energy Without the Hot Air](#)", ITU, Cambridge, Chapter 15, "Stuff", 2009.
- Patricia Rogers, "[Theory of Change](#)," Methodological Briefs-Impact Evaluation No. 2, UNICEF Office of Research, Florence, 2014.
- Paul Pholeros | TEDxSydney - May 2013 [How to reduce poverty? Fix homes](#)
- Rueda, S., "[Carta para la Planificación ecosistémica de las ciudades](#)". pps. 1-67. Ecología Urbana, Icaria Editorial, 2022.
- Spotswood, E.; Grossinger, R.; Hagerty, S.; Bazo, M.; Benjamin, M.; Beller, E.; Grenier, L.; Askevold, R. A. "[Making Nature's City](#)." SFEI Contribution No. 947. San Francisco Estuary Institute: Richmond, CA. 2019.
- Subirats, J. Quintana, I. Vidal, M. y Rueda, S. [El libro verde de medio urbano en el ámbito de la Sostenibilidad social: hábitat urbano e inclusión social](#). Pps. 453-493. Capítulo del Libro Verde de Sostenibilidad Urbana y Local en la Era de la Información. Ed. Ministerio de Agricultura, Alimentación y Medio Ambiente, 2012.
- [Sustainable Human Development Strategy of the UGR](#)
- United Nations, Department of Economic and Social Affairs, [Sustainable Development Goals and Targets](#)
- Terrades, J. y Rueda, S. [El libro verde de medio urbano en el ámbito de la biodiversidad](#). Capítulo del Libro Verde de Sostenibilidad Urbana y Local en la Era de la Información. Ed. Ministerio de Agricultura, Alimentación y Medio Ambiente, 2012.
- Yacamán, C., Matarán Ruiz, A., Mata Olmo, R., Macías Figueroa, A., and Torres Rodríguez, A. "[Peri-Urban Organic Agriculture and Short Food Supply Chains as Drivers for Strengthening City/Region Food Systems-Two Case Studies in Andalucía, Spain](#)". Land Vol. 9, no. 6, pp. 177. 2020.
- Zivarts, Anna, "[The '15-Minute-City' isn't made for disabled bodies](#)," Bloomberg CityLab, April 2021.

RECOMMENDED READINGS

This is a list of faculty-recommended readings that students can refer to during the semester to help them address issues or questions that arise during their research. The faculty will also recommend additional readings and materials throughout the semester, adapting to the direction the teams' research takes.

- Acale Sánchez, F. "[Plazas y paseos de Granada, de la remodelación cristiana de los espacios musulmanes a los proyectos de jardines en el ochocientos](#)" Universidad de Granada, Granada, 2005.
- Bowerman, T., 2014, "[How much is too much? A public opinion research perspective](#)" *Sustainability: Science, Practice, & Policy*. Volume 10, Issue 1, p.1-15.
- Deutscher Forstwirtschaftsrat e.V., from Grober, Ulrich, 2012, [Sustainability - a cultural history](#) Green Books. See the following tabs: "German Forestry" and the 2 short chapters "Sustainability" and "Boundaries of Sustainability".
- DMA Europe, [WEG help to generate hydro-electricity for Windsor Castle](#)
- Ellen MacArthur Foundation, 2012, *Towards the Circular Economy Vol. 1*: "An economic and business rationale for an accelerated transition".
- Eurostat, [Sustainable Development in the European Union: Overview of Progress towards the SDGs in an EU context](#).
- Fournier, V, 2008, "[Escaping from the economy: the politics of degrowth](#)", *International Journal of Sociology and Social Policy*, Vol. 28 No. 11/12, (pp. 528-545).
- Freiburg Town Hall, [Environmental and Climate Protection in Freiburg](#), Chapter 1.4, pages 27-33.
- Frey, Wolfgang, Freiburg Green City, "[Thoughts On Sustainability](#)" pp. 10-29 Herder Verlag, 2011.
- Green City Times, [Green City: Europe's solar city, Freiburg](#), 4 pages, available:
- [Grenadian Association of Sustainability and Architecture](#)
- Hoornweg, Daniel; Bhada-Tata, Perinaz, 2012. "[What a Waste: A Global Review of Solid Waste Management](#)" *Urban development series; knowledge papers no. 15*. World Bank, Washington, DC. © World Bank.

- Jacobs, J. *Muerte y vida de las grandes ciudades*, Capitán Swings, Madrid, 2011.
- Le Corbusier. [*Principios De Urbanismo: La Carta De Atenas*](#). Barcelona: Ariel, 1971.
- López Castellano, F., Matarán, A., *La Tierra no es muda, diálogos entre el desarrollo sostenible y el postdesarrollo*. Editorial University of Granada, Granada, 2011
- Smil, Vaclav, 2017, *Energy and Civilization*, Cambridge: MIT Press, ch 6, "Fossil-fuelled Civilization," pp 295-381.
- Spanner Re2 GmbH, [*Wood gasifier at Scotston Farm - Biomass Power Plant*](#).
- The B1M Limited, [*3 Cool Ways to Cool Our Cities*](#)
- Umwelt Bundesamt, 2019, [*Rebound effects*](#).
- US Department of Agriculture: [*Sustainability*](#), pp 1-3 (Introduction plus 'Planning Rule Requirements'), page 9 (chapter "Describe the ecological context").
- Wirth, H., *Recent facts about photovoltaics in Germany*, Fraunhofer Institute ISE, ch. 2 and 3 (pp 5-6), ch. 13 and 14 (pp 38- 43)
- WWAP (United Nations World Water Assessment Programme)/UN-Water. 2018. [*The United Nations World Water Development Report 2018: Nature-Based Solutions for Water*](#). (P. 21-36 and 79-87) Paris, UNESCO.

ANNEX

PARTICIPATION RUBRIC

- Excellent participation (A)
 - Students demonstrate an active understanding of the assigned reading by carefully synthesizing the main ideas and formulating questions about their applications. In addition, they relate these ideas to their own experience and participate respectfully in class discussions, offering informed judgments and actively contributing to the dynamics of questioning in-class activities.
- Very good participation (B)
 - Students generally read assigned materials and can identify ideas, but sometimes do not think through their applications. They are collaborative in building on the contributions of others, but sometimes stray from the main topic. They show respect for the ideas of their peers and participate regularly in activities, although they may sometimes lose concentration or energy.
- Acceptable participation (C)
 - Students read the materials regularly, but superficially. They try to build on each other's ideas, but their contributions are shallow and have little relation to the current discussion, suggesting a lack of preparation.
- Insufficient participation (F)
 - Students consistently show that they read superficially or not at all. They do not participate in an informed manner, and their lack of interest in building on the ideas of others is notable.