

Brendan Harmon

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Fall 2019

Monday, Wednesday, & Friday

1:30pm–5:30pm

## Course Description

In this studio you will work in partnership with Sichuan Agricultural University (SAU)'s College of Landscape Architecture to design a new national park for giant panda conservation and tourism in the wilds of Sichuan Province, China. Our study area, the Fengtongzhai National Nature Reserve, is a biodiversity hotspot for giant pandas, golden snub-nosed monkeys, and red pandas. After fieldwork in Fengtongzhai and geospatial data analysis, you will model and design the spatial configuration of the new national park and its connections to a greater ecological network. You will learn how to analyze remote sensing data and model habitat corridors, urban growth, and land change. After applying computational methods for ecology to landscape planning you will use generative design to develop a system of landscape and architectural elements and structures for the national park that respond to the unique geomorphology, ecology, and cultural heritage of the reserve. You will design a regional plan with habitat corridors, a master-plan for the park, structures, trails, signage, furniture, and an adaptive management plan. You will use generative systems to design structures including a visitor center, breeding center, lodges, and ranger stations and a family of landscape elements including bridges, signage, and furniture. You will publish your work in a report for the Chinese government. This course includes 2 weeks of optional fieldwork in Sichuan Province, China. You will take short courses and participate in a collaborative studio at SAU in Chengdu and travel to the Chengdu Panda Breeding Research Center, Fengtongzhai, Jiuzhaigou, Huanglong Valley, Mount Emei, Mount Qingcheng, and Dujiangyan. Theoretical topics will include critical regionalism, landscape ecology, island biogeography, conservation corridors, systematic conservation planning, biodiversity hotspots, adaptive management, and climate change.

## Topics

### Conservation planning

- 0 Fieldwork
- 1 Fieldwork
- 2 Research
- 3 Research
- 4 Conservation planning
- 5 Conservation planning
- 6 Conservation planning
- 7 Conservation planning
- 8 Masterplanning

### National park design

- 9 Site design I
- 10 Site design II
- 11 Site Design III
- 12 Site Design IV
- 13 Site Design V
- 14 Report
- 15 Report
- 16 Final review

## Fieldwork

The fieldwork excursion to Sichuan Province in China is optional, but highly recommended. Our partner and host, Sichuan Agricultural University, has generously agreed to fund most expenses in China except for tourist site tickets. Students will be responsible for airfare, visas, tourist tickets, and course fees. The course fee of \$230 includes travel insurance and tourist site tickets. Each student is recommended to bring around ¥1000 RMB (approx. \$145 USD) in cash for personal expenses.

<b>08.17.2019</b>	BTR – CTU	<b>08.25.2019</b>	Mt. Emei
<b>08.18.2019</b>	Chinese language	<b>08.26.2019</b>	Ink painting
<b>08.19.2019</b>	Dujiangyan & Mt. Q.	<b>08.27.2019</b>	Ink painting
<b>08.20.2019</b>	Chinese gardens	<b>08.28.2019</b>	Tea culture
<b>08.21.2019</b>	Panda Breeding Center	<b>08.29.2019</b>	Tea culture
<b>08.22.2019</b>	Fengtongzhai	<b>08.30.2019</b>	Bamboo culture
<b>08.23.2019</b>	Fengtongzhai	<b>08.31.2019</b>	CTU – BTR
<b>08.24.2019</b>	Mt. Emei		

## Projects

This studio will be an introduction to computational methods for landscape ecology and planning. It will cover theory and computational methods for topics such as habitat fragmentation and conservation corridors. You will learn how to model ecological patterns and simulate ecological processes using Geographic Information Systems (GIS). Then you will use landscape planning methods in GIS and visual programming in Grasshopper to develop designs for a national park that respond to these ecological processes.

**Conservation planning** As teams you will address one of the following topics: precedent studies, conservation corridors, terrain modeling, mapping, or regional planning. Then as a class you will design a draft masterplan for the national park.

**Site design** As individuals or teams you will develop a schematic design one of the following: park masterplan, visitor center, breeding center, trail system, observation points, wildlife over/underpasses, or signage.

**Report** As a class you will prepare and publish a report for our partners in Sichuan.

## Grading

Planning 33%

Design 33%

Report 33%

## Software

QGIS | <https://qgis.org/>

GRASS GIS | <https://grass.osgeo.org/>

ArcGIS | <https://www.esri.com/>

Rhinoceros | <https://www.rhino3d.com/>

LandScape Corridors | [https://github.com/LEECLab/LS\\_CORRIDORS/wiki](https://github.com/LEECLab/LS_CORRIDORS/wiki)

MaxEnt | [https://biodiversityinformatics.amnh.org/open\\_source/maxent/](https://biodiversityinformatics.amnh.org/open_source/maxent/)

## Resources

Sichuan Dataset | <https://doi.org/10.5281/zenodo.3359645>

Intro to QGIS | [https://docs.qgis.org/2.18/en/docs/gentle\\_gis\\_introduction/](https://docs.qgis.org/2.18/en/docs/gentle_gis_introduction/)

Intro to GRASS GIS | <https://ncsu-geoforall-lab.github.io/grass-intro-workshop/>

Grasshopper Primer | <http://grasshopperprimer.com>

LearnArcGIS | <https://learn.arcgis.com/en/projects/build-a-model-to-connect-mountain-lion-habitat/>

## Readings

### Architecture

- Campanella, Thomas J. 2012. *The Concrete Dragon: China's Urban Revolution and What it Means for the World*. Princeton Architectural Press.
- Shan, Deqi. 2011. *Chinese Vernacular Dwellings*. Introductions to Chinese Culture. Cambridge University Press.
- Eggenger, Keith L. 2002. "Placing Resistance: A Critique of Critical Regionalism." *Journal of Architectural Education* 55 (4): 228–237.
- Frampton, Kenneth. 1998. "Towards a Critical Regionalism: Six Points for an Architecture of Resistance." In *The anti-aesthetic: essays on postmodern culture*, ed. by Hal Foster, 17–34. New York: New Press.
- Liang, Ssu-ch'eng. 1984. *A Pictorial History of Chinese Architecture: A Study of the Development of Its Structural System and the Evolution of Its Types*. Ed. by Wilma Fairbank. MIT Press.

### Landscape

- Yu, Kongjian. 2009. "Beautiful Big Feet." *Harvard Design Magazine* 31.
- Keswick, M, C Jencks, and A Hardie. 2003. *The Chinese Garden: History, Art and Architecture*. Harvard University Press.
- McHarg, Ian. 1995. *Design with Nature*. Wiley Series in Sustainable Design. Wiley.
- Cheng, Ji. 1988. *The Craft of Gardens*. Trans. by Alison Hardie. Yale University Press.

### Culture

- Zhang, Xinxin, and Ye Sang. 1988. *Chinese lives: an oral history of contemporary China*. Ed. by William John Francis Jenner. Pantheon Books.

### Computing

- Tedeschi, A. 2014. *AAD Algorithms-aided Design: Parametric Strategies Using Grasshopper*. Le Penseur.
- Neteler, Markus, and Helena Mitsova. 2008. *Open Source GIS: A GRASS GIS Approach*. 3rd ed. The Springer International Series in Engineering and Computer Science. Springer US. doi:[10.1007/978-0-387-68574-8](https://doi.org/10.1007/978-0-387-68574-8).

## Conservation

- Kang, Dongwei, and Junqing Li. 2019. "Giant panda protection: challenges and hopes." *Environmental Science and Pollution Research* 26 (18): 18001–18002. doi:[10.1007/s11356-019-05404-7](https://doi.org/10.1007/s11356-019-05404-7).
- Zhang, Yu, Céline Clauzel, Jia Li, Yadong Xue, Yuguang Zhang, Gongsheng Wu, Patrick Giraudoux, Li Li, and Diqiang Li. 2019. "Identifying refugia and corridors under climate change conditions for the Sichuan snub-nosed monkey (*Rhinopithecus roxellana*) in Hubei Province, China." *Ecology and Evolution* 9 (4): 1680–1690. doi:[10.1002/ece3.4815](https://doi.org/10.1002/ece3.4815).
- Wei, Wei, et al. 2018. "Giant panda distributional and habitat-use shifts in a changing landscape." *Conservation Letters* 11 (6): 1–10. doi:[10.1111/conl.12575](https://doi.org/10.1111/conl.12575).
- Yan, Zhaogui, Mingjun Teng, Wei He, Yuan Wang, Jingyuan Yang, and Pengcheng Wang. 2018. "Improving conservation effectiveness of nature reserve for golden snub-nosed monkey, a niche-based approach." *Ecology and Evolution* 8 (18): 9315–9325. doi:[10.1002/ece3.4447](https://doi.org/10.1002/ece3.4447).
- Zhen, Jing, Xinyuan Wang, Qingkai Meng, Jingwei Song, Ying Liao, Bo Xiang, Huadong Guo, Chuansheng Liu, Ruixia Yang, and Lei Luo. 2018. "Fine-scale evaluation of giant panda habitats and countermeasures against the future impacts of climate change and human disturbance (2015-2050): A case study in Ya'an, China." *Sustainability (Switzerland)* 10 (4): 1–19. doi:[10.3390/su10041081](https://doi.org/10.3390/su10041081).
- Li, Renqiang, Ming Xu, Ryan Powers, Fen Zhao, Walter Jetz, Hui Wen, and Qingkai Sheng. 2017. "Quantifying the evidence for co-benefits between species conservation and climate change mitigation in giant panda habitats." *Scientific Reports* 7 (1): 1–9. doi:[10.1038/s41598-017-12843-0](https://doi.org/10.1038/s41598-017-12843-0).
- Xu, Weihua, Andrés Viña, Lingqiao Kong, Stuart L. Pimm, Jingjing Zhang, Wu Yang, Yi Xiao, Lu Zhang, Xiaodong Chen, Jianguo Liu, and Zhiyun Ouyang. 2017. "Reassessing the conservation status of the giant panda using remote sensing." *Nature Ecology and Evolution* 1 (11): 1635–1638. doi:[10.1038/s41559-017-0317-1](https://doi.org/10.1038/s41559-017-0317-1).
- Qing, Jing, Zhisong Yang, Ke He, Zejun Zhang, Xiaodong Gu, Xuyu Yang, Wen Zhang, Biao Yang, Dunwu Qi, and Qiang Dai. 2016. "The minimum area requirements (MAR) for giant panda: An empirical study." *Scientific Reports* 6:1–9. doi:[10.1038/srep37715](https://doi.org/10.1038/srep37715).
- Glatston, Angela R., ed. 2010. *Red Panda: Biology and Conservation of the First Panda*. Noyes Series in Animal Behavior, Ecology, Conservation, and Management. Elsevier Science. doi:[10.1016/C2009-0-20348-5](https://doi.org/10.1016/C2009-0-20348-5).
- Xu, Weihua, Zhiyun Ouyang, Andrés Viña, Hua Zheng, Jianguo Liu, and Yi Xiao. 2006. "Designing a conservation plan for protecting the habitat for giant pandas in the Qionglai mountain range, China." *Diversity and Distributions* 12 (5): 610–619. doi:[10.1111/j.1366-9516.2006.00236.x](https://doi.org/10.1111/j.1366-9516.2006.00236.x).

## Policies

**Time Commitment Expectations** LSU's general policy states that for each credit hour, you (the student) should plan to spend at least two hours working on course related activities outside of class. Since this course is for three credit hours, you should expect to spend a minimum of six hours outside of class each week working on assignments for this course. For more information see: <http://catalog.lsu.edu/content.php?catoid=12&navoid=822>.

**LSU student code of conduct** The LSU student code of conduct explains student rights, excused absences, and what is expected of student behavior. Students are expected to understand this code: <http://students.lsu.edu/saa/students/code>.

**Disability Code** The University is committed to making reasonable efforts to assist individuals with disabilities in their efforts to avail themselves of services and programs offered by the University. To this end, Louisiana State University will provide reasonable accommodations for persons with documented qualifying disabilities. If you have a disability and feel you need accommodations in this course, you must present a letter to me from Disability Services in 115 Johnston Hall, indicating the existence of a disability and the suggested accommodations.

**Academic Integrity** According to section 10.1 of the LSU Code of Student Conduct, "A student may be charged with Academic Misconduct" for a variety of offenses, including the following: unauthorized copying, collusion, or collaboration; "falsifying" data or citations; "assisting someone in the commission or attempted commission of an offense"; and plagiarism, which is defined in section 10.1.H as a "lack of appropriate citation, or the unacknowledged inclusion of someone else's words, structure, ideas, or data; failure to identify a source, or the submission of essentially the same work for two assignments without permission of the instructor(s)."

**Plagiarism and Citation Method** Plagiarism is the "lack of appropriate citation, or the unacknowledged inclusion of someone else's words, structure, ideas, or data; failure to identify a source, or the submission of essentially the same work for two assignments without permission of the instructor(s)" (Sec. 10.1.H of the LSU Code of Student Conduct). As a student at LSU, it is your responsibility to refrain from plagiarizing the academic property of another and to utilize appropriate citation method for all coursework. In this class, it is recommended that you use Chicago Style author-date citations. Ignorance of the citation method is not an excuse for academic misconduct.