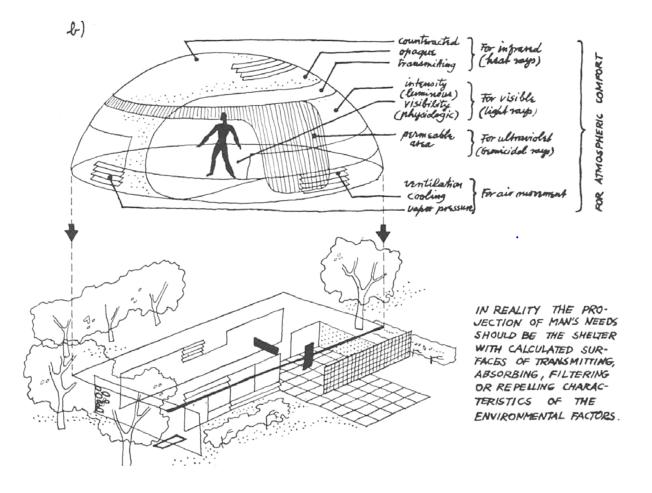
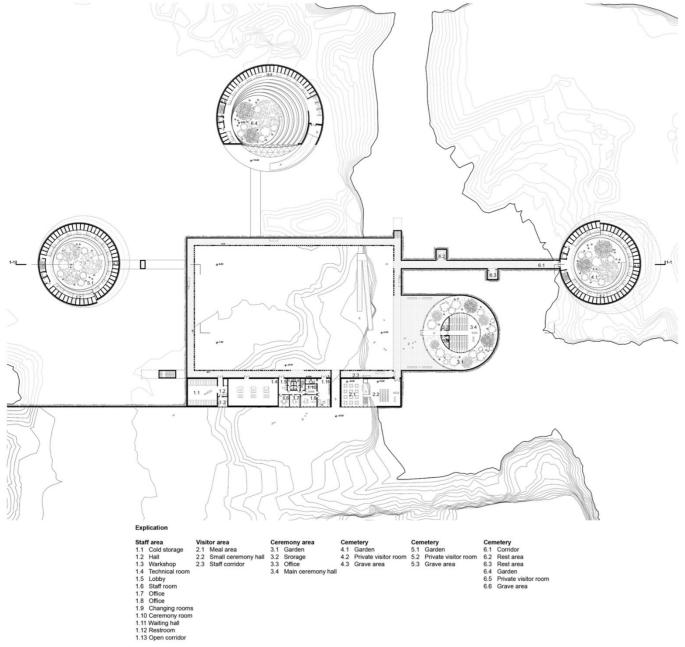


FOCUS >> climate as a basis for architectural design



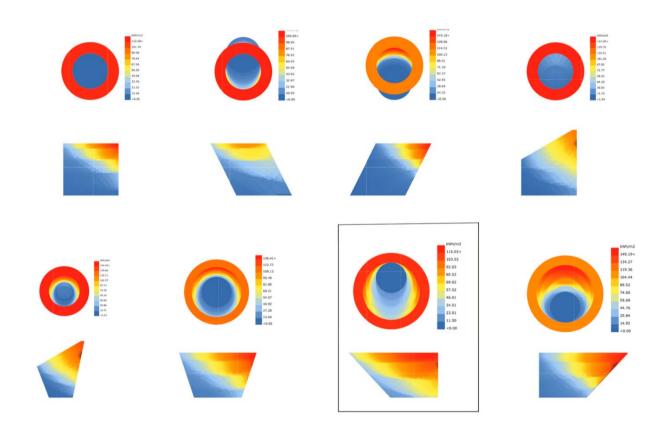


Victor Olgyay _ Design with Climate





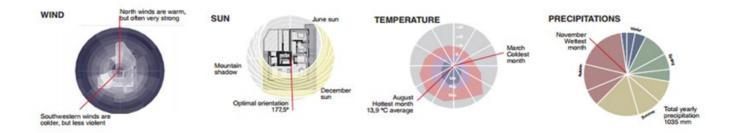
Luca Finocchiaro 🖸 NTNU Det skapende universitet





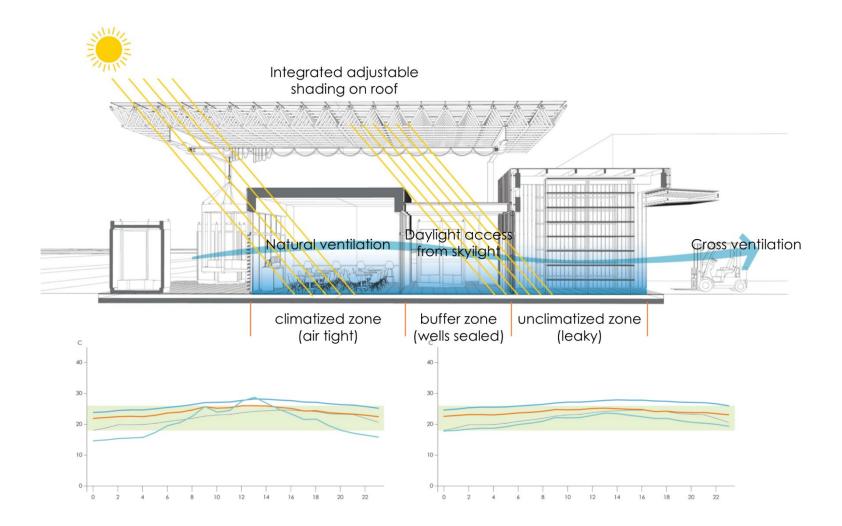
??*?*?*?*?*?*?*?*?*?*?*?*?*?*?,-2.6,-9.4,59,92774,0,0,229,0,0,0,0,0,0,9999,263,0.3,1,1,9999,99999,9,999999999,5,0.235,0 *?*?*?*?*?*?,-2.7,-9.6,59,92774,0,0,228,0,0,0,0,0,9999,252,0.5,1,1,9999,99999,9,9999999,5,0.235,0 ?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*?,-2.9,-9.3,62,92774,0,0,229,0,0,0,0,0,0,0,9999,231,0.3,1,1,9999,9999,9,9,99999999999,5,0.235,0 ,-2.9,-8.3,66,92774,4,1412,233,0,0,0,27,0005,26,9999,237,1.1,1,1,1,9999,99999,9,999999,5 ?*?*?*?*?*?*?*?*?*?*?*? , -1.2, -8.0, 60, 92774, 166, 1412, 236, 75, 311, 39, 7688, 15717, 5841, 9999, 169, 0, 7, 1, 1, 9999, 99999, 9?*?*?*?*?*?*?*?*?*?*?*?*?*?,1.3,-7.6,51,92774,383,1412,237,206,483,74,21385,37919,11093,9999,253,3.8,1,1,9999,99999?*?*?*?*?*?*?*?*?*?*?*?*?*?,3.9,-8.4,40,92774,551,1412,235,325,534,116,35109,47411,16587,9999,95,2.6,3,2,9999,9999 *?*?*?*?*?*?*?*?*?*?*?*?*?.6.2,-8.7,33,92774,659,1412,235,413,616,126,43469,54891,17828,9999,181,2.6,1,1,9999,99999 *?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*.8.0,-8.6,30,92774,700,1412,237,440,611,137,46284,54568,19240,9999,145,3.4,3,2,9999,99999 -8.7, 27, 92750, 669, 1412, 239, 414, 582, 138, 43283, 50796, 19198, 9999, 58, 4.0, 3, 2, 9999, 999999.1. ?*?*?*?*?*?*?*?*?*?*?*?*?*? *?*?*?*?*?*?*?*?*?*?*?*?*?*?,9.5,-8.1,28,92726,571,1412,243,339,543,120,36711,48441,17129,9999,100,2.8,3,2,9999,99999 9 -7.6, 30, 92702, 410, 1412, 246, 224, 449, 93, 23845, 36727, 13171, 9999, 131, 5.3, 1, 1, 9999, 99999?*?*?*?*?*?*?*?*?*?*?*?*? -7.8,32 91 ήοr 51,9519,17295 7079,9000 81,2.6,1,1,9990 03999,9,99 ?*?*?*?*?*?*?*?*?*?*?*?*? *?*?*?*?*?*?*?*?*?*?*?*?.6.0,-6.7,40 ,3.1. ,0007,90,9999 ,9999,99999, 199999999.6 .0 1.-6.5.43.92630,0 251,0,0,0,0 o.0.235,0,4 *?*?*?*?*?*?*?*?*?*?*?*?*? 5 999.97.1.5 399.95 9.9999999 *?*?*?*?*?*?*?*?*?*?*?*?*? .3, -7.1, 43, 92606, 0 248,0,0,0,0 **399,146,1.7** 9.99999 9.6,0.235,0, **)999,9**5 L ?*?*?*?*?*?*?*?*?*?*?*?*?*?*?.3.4.-7.0.46.92582.0 247,0,0,0,0 99.159.1. ,99,6,0.235,0 0 3. **3999.99**5 **J.999** ?*?*?*?*?*?*?*?*?*?*?,2.5,-7.2,48,92558,0 246,0,0,0,0 0, **79.120.0** 3. 3999,9995 99r ,999,6,0.235,0, .1.7.-7.5.50.92534.0 ?*?*?*?*?*?*?*?*?*?*?*? 0,\ 9.220.0 JC J9999,5,0.235,0. 244,0,0,0,0 **3999.99999 ∠,3** ?*?*?*?*?*?*?*?*?*?*?*?.0.8.-7.2.55.92510.0 1,216 J99999,6,0.235,0, 244,0,0,0,0 0.9)999.99999 *?*?*?*?*?*?*?*?*?*?.-0.1,-5.8,65,92486, .249.0.0.0. ,0,5 9,247 .4, ,9999,99999, 99999999,6,0.219,0 ?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*? .-1.0.-5.9.69.92462. ,248,0,0,0, ,0,9 ,22 2.0. 99999999,6,0.219,0 ,9999,99999, ,-2.0,-5.6,76,92438, 3.8,4 ,248,0,0,0, ,0,95 ,11 9999.99999. 99999999.6.0.219.0 ?*?*?*?*?*?*?*?*?*?*?*?*? -2.5, -5.4, 80, 92414, 2.4,4 *?*?*?*?*?*?*?*?*?*?*?*? ,249,0,0,0, .0.99 6 **)**999,99999,9 9999999,6,0.219,0, ?*?*?*?*?*?*?*?*?*?*?*?,-3.0,-5.5,83,92390, ,248,0,0,0, ,0,999 ,3.4,4 **)**999.99999.9 9999999,6,0.219,0, -3.4.-6.0.82,92366, 1.9.4 ?*?*?*?*?*?*?*?*? ,246,0,0,0, .0.999 **)**999.99999.9 9999999.6.0.219.0. *?*?*?*?*?*?*?*?*?*?*?*?*?*?*?,-3.7,-5.5,87,92342,v,v,248,0,0,0,v,v,0,9999,y/,2.4,4,2,y999,9999,9,9y999999999996,0,0219,0 ?*?*?*?*?*?*?*?*?*?*?*?*?*?,-3.8,-5.7,86,92318,4,1412,248,0,0,0,24,0005,24,9999,74,0.6,4,3,9999,99999,9,9999999,6 . . - 5.7.81.92294.165.1412,249.52.79,43.5760,5326,5135,9999,174,0.9,5,5,9999,99999,9,99 *?*?*?*?*?*?*?*?*?*?*?*?.-2. ,-0.9,-5.2,73,92270,383,1412,245,190,384,86,20303,29755,12227,9999,136,0.8,5,4,9999,9999 *?*?*?*?*?*?*?*?*?*?*?*? *?*?*?*?*?*?*?*?*?*?*?*?*?*?.1.1,-4.4,66,92246,552,1412,248,304,374,157,32659,35462,18792,9999,147,1.2,6,5,9999,99999 ?*?*?*?*?*?*?*?*?*?*?*?,0.6,-5.6,63,92222,661,1412,265,77,0,77,9429,0,9429,9999,166,0.5,10,9,9999,99999,9,999999 ,1.1,-5.9,59,92198,701,1412,254,216,33,200,23920,2449,22703,9999,221,1.7,10,9,9999,9999 ?*?*?*?*?*?*?*?*?*?*?*?*? ?*?*?*?*?*?*?*?*?*?*?*?*?*?*?,1.1,-6.6,57,92223,671,1412,257,137,0,137,16011,0,16011,9999,151,2.0,10,9,9999,99999,9,99 ?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*?.2.0,-7.7,48,92248,573,1412,234,347,378,193,36817,35365,22456,9999,105,0.8,6,5,9999,99999 (?*?*?*?*?*?*?*?*?*?*?*?*?*?*?*?,1.9,-8.3,47,92273,413,1412,242,161,140,120,17680,12477,14028,9999,157,1.7,9,8,9999,99999)





Translating data into diagrams informing the design process





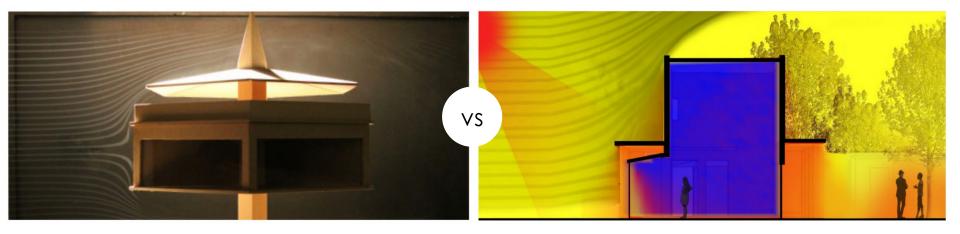


Learning outcome Main focus of the course is the environmental performance of climate adaptive buildings and their ability to passively create comfortable internal conditions. Thus energy.





Tools

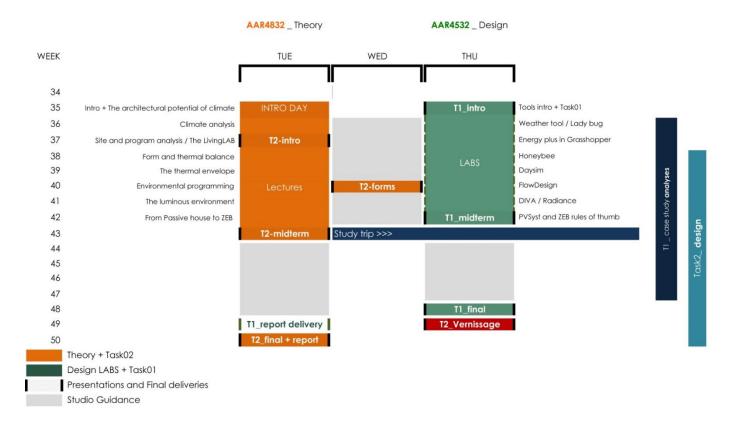


analogue

digital



AAR4832+AAR4532 Detailed program





AAR4832+AAR4532 Detailed program

- U.1 _ The architectural potential of climate
- U.2 _ The bioclimatic approach
- U.3 _ FORM and thermal balance
- U.4 _ **HEAT** Passive solar heating systems
- U.6 _ AIR Natural ventilation strategies
- U.7 _ LIGHT The luminous environment

Task 1 > Task 2

Analysis > Application

scope <u>learning</u> principles and tools for sustainable architecture while

developing competences scope _ defining a meaningfull **design process** based on the understanding of the external environment

CASE STUDY ANALYSES >> ARCHITECTURAL DESIGN



Task 2: studio >> climate adaption

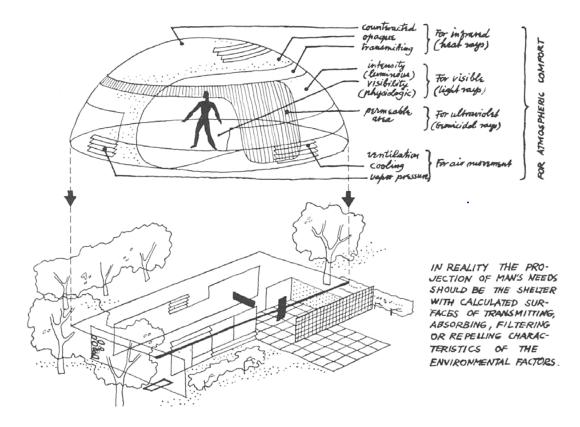


TASK 2 _ The bioclimatic shelter

Experimental design of Shelters for Post-Disaster Recovery and Development

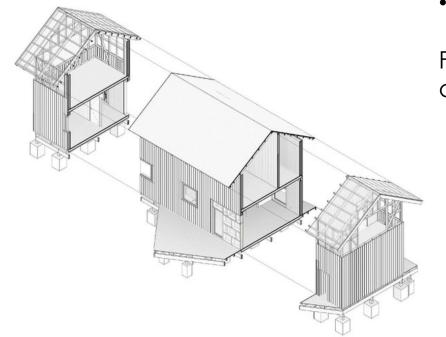






1963 _ Any building, as a bioclimatic shelter, should "be able to absorb or repel climatic factors in relation to their beneficial or adverse role for human comfort" Victor Olgyay





Program

- Prefabricated
- Fast-built
- Climate adapted shelters

For post-disaster recovery and development

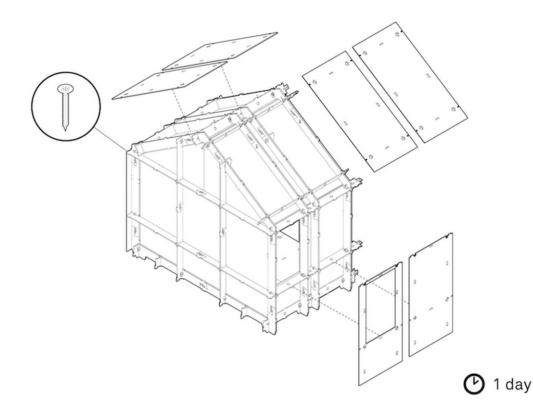


Source: <u>https://www.archdaily.com/965657/architecture-with-sip-panels-fast-build-high-performance-prefabricated-homes</u>



TASK 2 _ challenges

- Detailing for production (open source construction drawing)
- Quantitative + qualitative dimension of environmental design
- Design in four climatic contexts



Source: Wikihouse's Alastair Parvin on how to build your own house Luca Finocchiaro



TASK 2 _ Learning outcomes

environmental performance + environmental imagination

Understanding of climate as a source for making architecture on a quantitative and qualitative basis

Ability to implement correct climate adaptive measures for ensuring indoor comfort while increasing buildings' energy efficiency

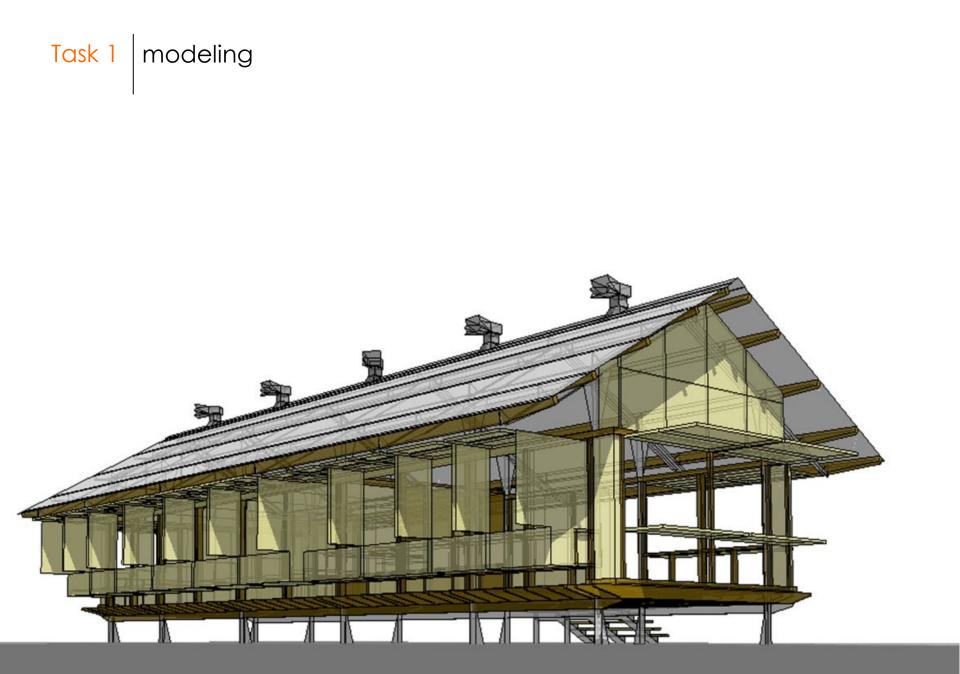


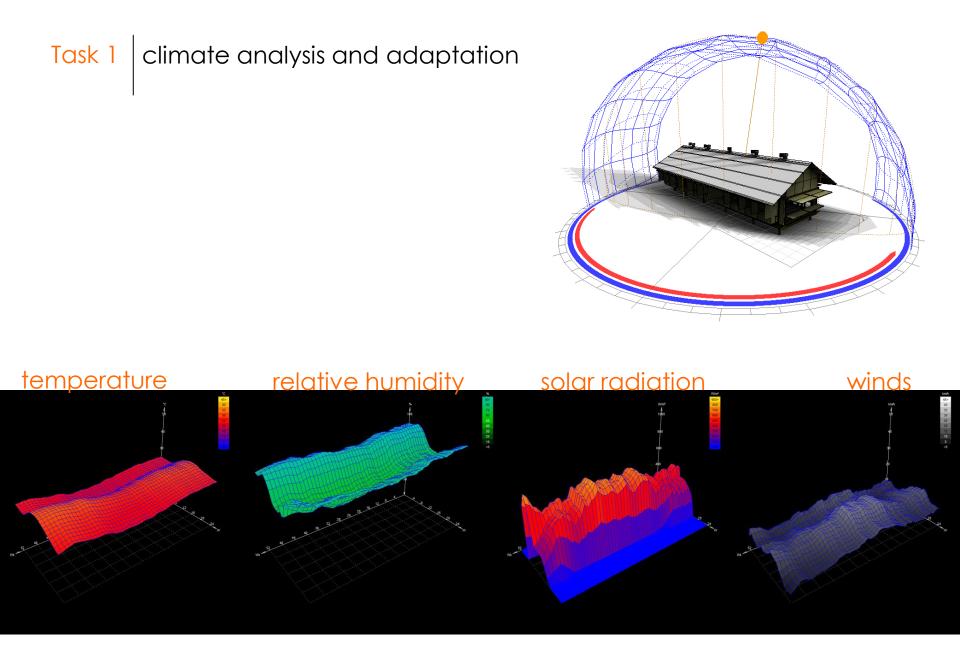
Task 1ANALYSES Know-how > application DESIGNTask 2



Task 1extracting principles and strategies for bioclimatic designfrom the analysis of relevant case studies



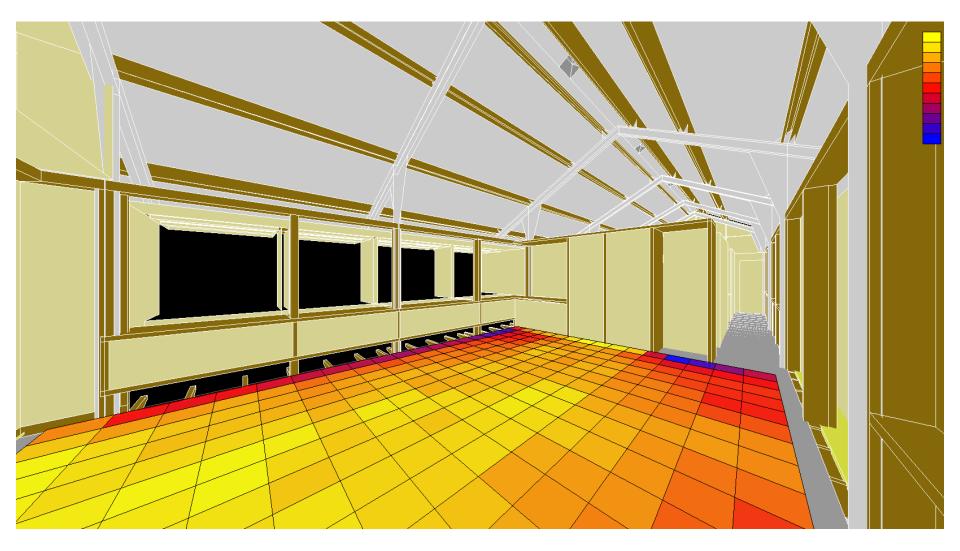




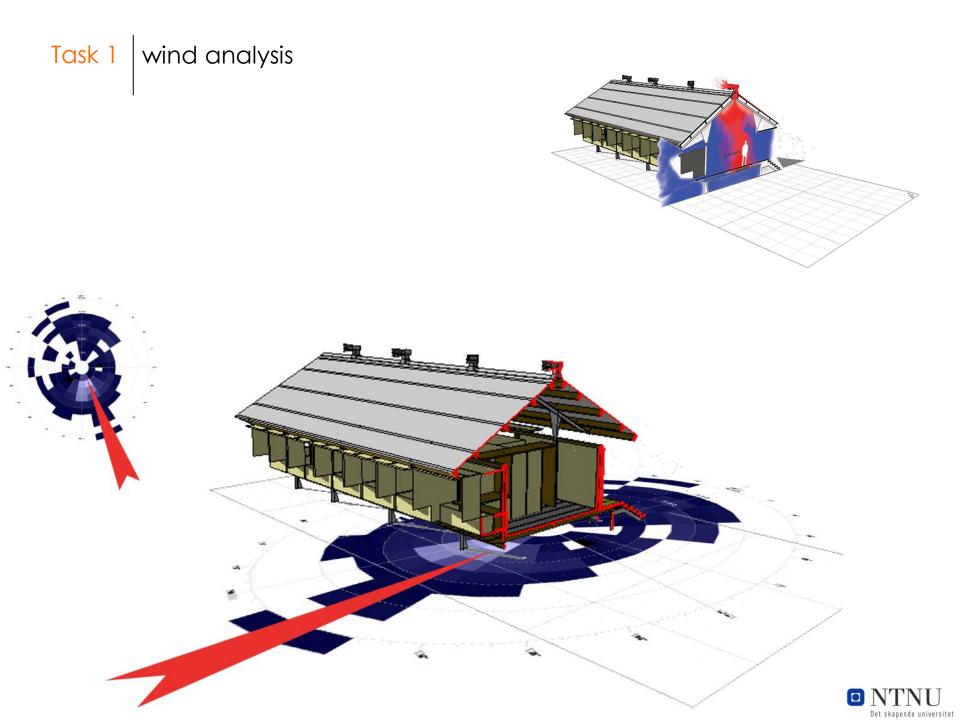


Task 1Internal daylight analyses









AAR4832+AAR4532 Course logistics

Max number of students _ 20 MSc SustArch + 8 Architecture students

Teaching team:

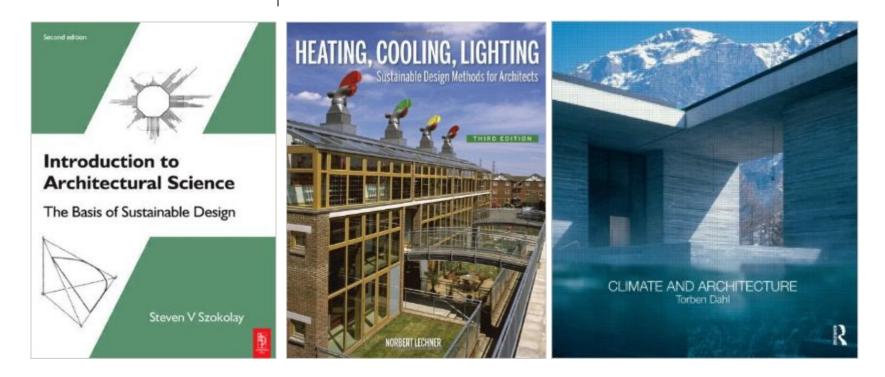
Luca Finocchiaro Anshuman Mishra Ole Jørgen Bryn Bunji Izumi + 2 Student assistants

Language: English

Course Start: 28. August



AAR4832+AAR4532 Pensum



- Steven Szokolay, The basis of sustainable design, Architectural press, USA 2008
- o Norbert Lechner, Heating Cooling and Lighting, John Wiley and Sons Inc., USA 2008
- Torben Dahl, Climate and Architecture, Routledge ED.
- Victor Olgyay, Design with Climate, Princeton University Press, New Jersey 1963

+ articles and material on itslearning