



Dep't Earth, Ocean & Atmospheric Sciences



Dep't Geography



University  
of Central Asia

# Curriculum design: lessons learned while adapting UBC courses for a new BSc degree at the University of Central Asia

*Francis Jones and UBC / UCA partnership team*

*Fac. Sci. Skylight Supper Series, Nov. 27, 2018.*



THE UNIVERSITY OF BRITISH COLUMBIA

**Faculties of Science and Arts**



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\* **Contact:** Francis Jones, Science Education Specialist,  
EOAS, UBC, [fjones@eoas.ubc.ca](mailto:fjones@eoas.ubc.ca)

# Goals

- Brainstorm “*fresh slate*” curriculum design
- Discuss implications for curriculum review
- Introduce the UBC / UCA curriculum development partnership
- Summarize some lessons learned about curriculum development

# Outline

- Introduce the scenario
- Worksheet – solo, groups (tables)
- Share & discuss
- UBC / UCA partnership:  
    setting - progress - highlights - experiences

## UBC team (EOAS and Geography)

Francis	Jones	UBC coordinator
Loch	Brown	Geography Liaison
Elizabeth	Gillis	Chemistry
Linda	Strubbe	Physics
Erica	Jeffery	Ecology
Arthur "Gill"	Green	GIS x 2
Tara	Holland	Environ. / Geography x 6
Chris	Kopp	Conservation & ecology x 2
Lucy	Porritt	Geology x 2
Phil	Hammer	Geology x 2
Ozlem	Suleyman	Geology x 2
Brendan	Hunt	geoscience & hydrology
Fatima	Mannapbekova	Research assistant (Geog)
Qingyang	Liu	Undergrad assist (Geog)
Akash	Turkay	Undergrad assist (Min. Eng)
Iram	Malik	Undergrad assist (Chem. Eng)

How many are currently (or were recently) thinking about program curricula, or at least “course sequencing”?

# Can thinking about “*starting curriculum design from scratch*” inform reviews of existing curricula?

- Considering “ideal” situations often informs “real” situations.
- Helps us step aside from the familiar - i.e. enables a fresh view onto curriculum.
- Can help establish a “baseline” against which to measure reality.
- Enables exploration of options for mapping curriculum along various dimensions.

## **Some key characteristics of curriculum:**

- S.M.A.R.T. curriculum or course goals = specific, measurable, active, relevant, time-sensitive.
- appropriate conceptual or academic foundations.
- appropriate balance of repetition with “new”.
- balance between depth and breadth.
- balancing development of skills, knowledge, attitudes.
- balance between “content” and “practice”.

# Think about:

## Curriculum design and course development

List 2-3 ideas from the point of view of a curriculum / course developer.

1. What unique opportunities might arise due to “starting from scratch”?

2. Key considerations for successful development of a new program and courses?

3. What first steps might you take if you are a course developer on this team?

Questions or comments:

Context on next page.

# Context: parameters for this new degree

- **Context:** English-language; developing / emerging nation; newly constructed, modern residential campus.
- **Goals:** Well-articulated *institution- & program-level* outcomes; preliminary, recommended course list.
- **Funding:** good, but not unlimited.
- **Faculty:** still hiring; well qualified from major western institutions.
- **Students:** 80% from the region, “*blind, needs-neutral, merit-based*” recruitment, (aiming for gender-balanced).
- **Academic program:** 1<sup>st</sup> yr “transition”, 2<sup>nd</sup> yr “liberal arts”, 3<sup>rd</sup> yr “BSc prerequisites”, 4<sup>th</sup> & 5<sup>th</sup> yrs for specialist program courses.

# 1. Unique opportunities

-

## 2. Key considerations

-

## 3. Possible first steps

-



# Summarize some lessons learned by team members

## Samples of responses to similar questions

### **Results from:**

- Seven course developers.
- Questions posed in a “reflective” rather than “predictive” mode.
- Responses were articulate and thoughtful.
- Total of 114 comments.
- Results summarized using 6-7 “codes” for each question.

# 1. Unique opportunities to have arisen due to “starting from scratch”

## *Examples paraphrased from 36 thoughtful comments:*

- chance to think about ‘flow’, and how courses fit together.
- develop a course you felt would serve the students rather than put students into a course that already exists.
- a ton of potential for research collaboration if I and others in the group choose to pursue them.
- enables many new examples and ideas to be incorporated & hopefully spun back to UBC courses.
- opportunity to collaborate with professors and TAs who bring their input to courses I am developing.
- the new institution is keen to see “best practices” throughout.

OPPORTUNITIES	
fresh start for a course	28%
engage in curriculum design	25%
team - collaboration (UBC & UCA)	17%
other	14%
context & local setting	11%
visit / travel	6%
N =	36

## 2. Key considerations for success

### *Examples paraphrased from 29 thoughtful comments:*

- Balancing "big picture" against all the minor details.
- Scope of the course must be based on consideration of the program as a whole.
- Understanding the targeted goals, especially if different from our experiences.
- How to orient and support diverse, new faculty during first term & subsequently.
- How content, skills and habits of mind come together across curriculum, and within courses.
- Practical hands on aspects of learning (eg specimens, rocks, field experiences, etc).
- Does the material relate to the region?
- Documentation and templates to support consistent deliverables.
- External review: meeting in person with an interested expert.
- Good communication / working relationship within the UBC team and with partners.

KEY CONSIDERATIONS	
aspects of "curriculum"	27%
aspects of "learning"	14%
faculty and transfer	11%
team work	11%
other	8%
reviewers	5%
personal or project	3%
N =	29

### 3. What first steps did you take?

*Examples paraphrased from 25 thoughtful comments:*

- investigate Central Asian science programs & look for case histories
- explore available local resources, culture of learning, details of the region, countries, university, campuses.
- meet students and current/potential faculty to learn about concerns & teaching approaches.
- put \*me\* & \*my interests\* aside in favor of EES, UCA and students (content, priorities & pedagogy).
- meet (weekly initially) & build working relations with team colleagues; connect and stay connected.
- survey colleagues for needed prerequisite skills; discuss results; brainstorm relevant program-themed problems.
- considered potential source courses in EOAS and GEOG (also UBC-O & SFU) for ideas about content, activities, assignments, etc.
- meet UBC faculty to discuss courses and any recent changes.

FIRST STEPS	
central asia (visit, cases, etc)	22%
team disc'n (curricular)	16%
consider UBC courses & others	14%
course or topics issues	8%
student issues	5%
other	3%
N =	25

## 4. Team was also asked about: *What challenges or constraints have you encountered?*

### *Examples from 32 thoughtful comments:*

- balancing overlap between courses, especially when not being developed at the same time.
- finding resources / materials / specimens locally or to bring in.
- building without knowing who will teach. This may be the biggest.
- uncertainties about students: who are they? what will they know or be capable of?
- logistics: long timeframe, team members work asynchronously, finding time to focus.
- building for both flexibility (unknown faculty) and rigor/reliability

<b>CHALLENGES &amp; CONSTRAINTS</b>	
student uncertainties	19%
course or content issues	14%
data / samples - local etc.	14%
personal / project issues	14%
instructor issues (eg unknown)	11%
other	8%
timing of course sched .	8%
N =	32

# (Some) lessons learned – and being learned:

## **Courses and content**

1. **Objectives & aspirations; institutional & program-levels:** know these well
2. **Guided curriculum workshop** early. (We will follow up – e.g. “mapping”).
3. **Contextualizing:** f2f visits & meetings are valuable. Also “research” support.
4. **Backward design:** objectives & capabilities, assessments, activities, content.

## **Logistics and communication.** (Note: more of these than actual curricular details.)

1. **Partnership relationship:** strive for respectful, friendly, flexible, scholarly.
2. **Instructor-developer relations:** flexibility needed if none.
3. **Students:** anticipating capabilities not always feasible
4. **External reviewers:** contributions can be very effective.
5. **Cohesive team:** team-build early; interact together on related courses.
6. **Timing:** challenging to work “part time” (although common in “consulting”).
7. **Documentation:** comprehensive and consistent syllabi and lesson plans.
8. **Undergraduate student support:** can make significant contributions.

## Special aspects: Inspired by our WMF2018 poster (Oct 2018, Bishkek, Kyrgyzstan)

Fatima Mannapbekova, Tara Holland, Francis Jones

<https://goo.gl/NKDj4q>



<https://wmf2018.org/>

### How does **curriculum development** contribute towards *“Strengthening sustainable mountain communities”*?

- **EES curriculum** is fundamentally driven by UCA’s core literacies
- **Courses** derived from UBC courses and adapted for Central Asian contexts
- **Other student experiences:** eg. Co-op summer placements (U-Vic. supported).
- **Collaborate** with UCA faculty (4 so far – more to come)
- **External support:** e.g. curriculum reviewers (6)
- **Visits:** students, campus, local professionals, communities, landscapes
- **Background research** for course contextualization supported by UBC undergrad. assistants
- **New faculty** will be researchers in mountain matters

# Nine were questions asked of course developers:

## *Which responses reflect curriculum thinking?*



<https://wmf2018.org/>

### **Nine questions; four responses given here ....**

1. What is a challenge associated with developing your courses?
2. I am making efforts to help students engage with the community. (Agree -> Disagree)
3. What's the most awesome teaching, learning or course development strategies you are incorporating into the courses you are developing?
4. Any further comments?
5. What personal and professional characteristics are helping you carry out your as a course developer?
6. My role as a course developer promotes resilience building and increases the capacities of mountain communities to explore new sustainable livelihood options (Agree -> Disagree)
7. The students taking my courses are encouraged to maintain traditional knowledge. (Agree -> Disagree)
8. My courses build students' abilities to recognize ethical issues and discuss the complexities or interrelationships between the issues. (Agree -> Disagree)
9. My courses encourage the engagement with intercultural knowledge and abilities to hold a global perspective. (Agree -> Disagree)





Selected responses with a “curricular” aspect:

<https://wmf2018.org/>

**What is a challenge associated with developing a course for students that come from different life-styles to your own?**

1. Accounting for different academic and cultural "prior knowledge".
2. Deciding the level at which to pitch the course as I don't know what their background knowledge is like.
3. Providing examples that are not western-centric.

Do any of these resonate as considerations for “normal” in-place curriculum review?

# Selected responses with a “curricular” aspect:



<https://wmf2018.org/>

## **I am making efforts to help students engage with the community?**

1. Active learning assignments and projects encourage instructors to have students engage with the subject matter in local geographical or cultural settings.
2. Students will apply new knowledge towards the environmental sectors such as mining, exploration, consulting, and environmental firms.
3. Yes for some, not for others, notably “fundamentals” courses.
4. Students should be visiting several community based conservancies during the course.
5. I aim to have students connecting on research projects with community organizations.

**Same point: what implications “normal” in-place curriculum review?**

# Selected responses with a “curricular” aspect:



<https://wmf2018.org/>

## **What’s the most awesome teaching, learning or course development strategies you are incorporating into the courses you are developing?**

1. Sound "active learning“, hopefully help to set precedent for evidence-based teaching in Central Asia.
2. I am building a lot of student-generated content into my courses. This encourages them to be creators of their own knowledge, while the instructor acts as a facilitator of this process.
3. Problem based learning

## **Further comments?**

4. Lessons learned while partnering with the AKDN are continually informing our work as professional educational developers. This cross-coupling of benefits may be one of the coolest aspect of the project.

**Again: what implications “normal” in-place curriculum review?**

# UBC / UCA curriculum development partnership and the University of Central Asia, Khorog campus, Tajikistan

If time – and interest – permit.

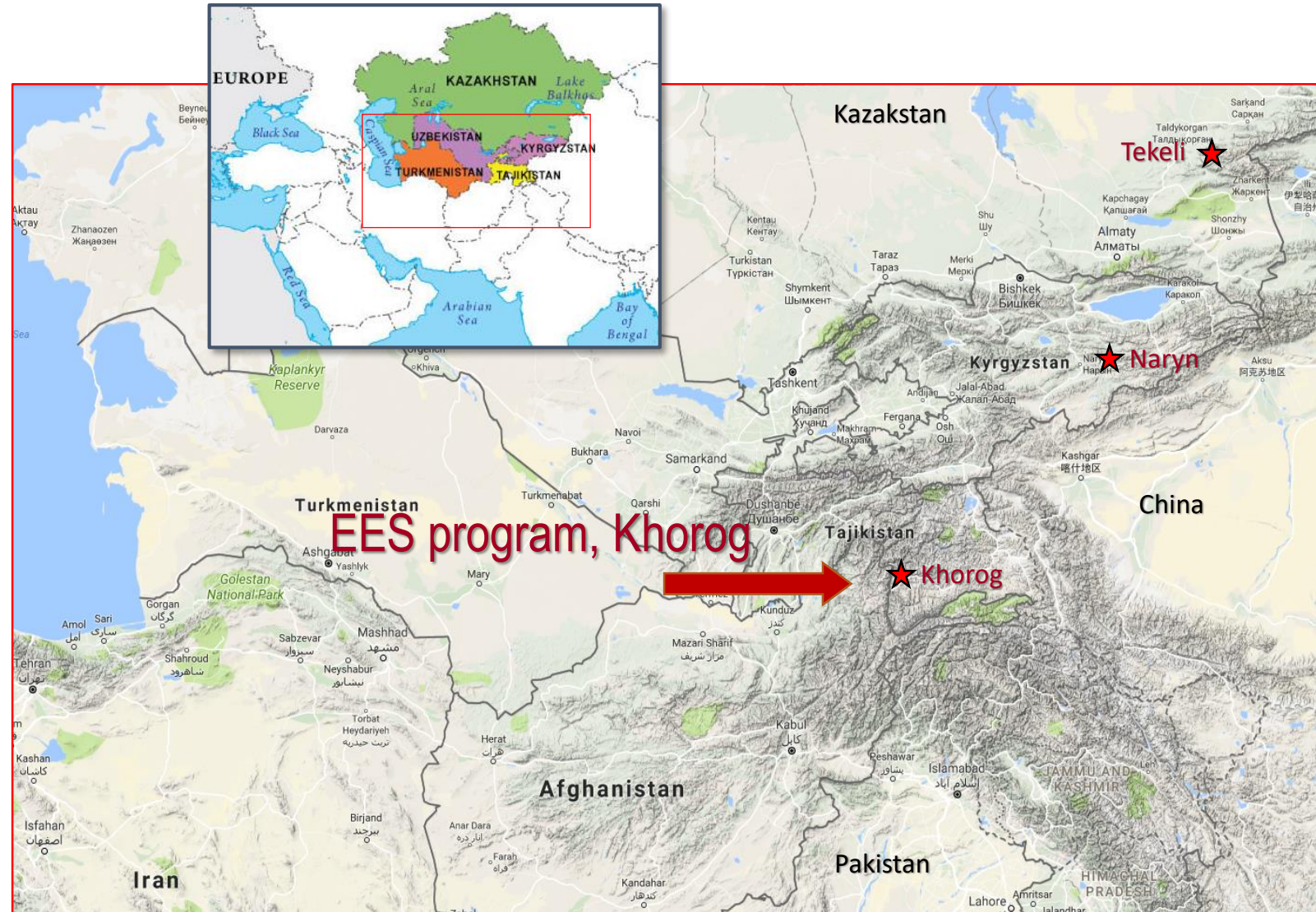
- Setting
- UBC's involvement
- Curriculum development model
- Course list
- Photos



University  
of Central Asia

# 1 University, 3 countries, 3 campuses, 6 undergrad degree programs

- Founded 2000
- Private, not for profit, secular university
- International Treaty;
  - Kyrgyz Republic / Tajikistan / Kazakhstan
  - His Highness the Aga Khan
- Focus on **mountain** societies
- School of Professional & Continuing Development
- 3 undergrad campuses / 6 prgms
- Research:
  - Mtn. Soc. Research Inst.
  - Inst. of Public Policy & Admin
  - Cultural Heritage & Humanities
- <http://www.ucentralasia.org>



<https://www.youtube.com/watch?v=nDyCSWkz3qk>

# EOAS & Geography Involvement:

Build 22 courses for the B.Sc. in *Earth & Environmental Sciences*.

- **2014:** Original EES degree concept note developed at Cornell U. (including 12 contributors).
- **Dec 2015:** UCA visits UBC; research & educational excellence.
- **2016:** Project, budget, contract developed at EOAS / Geog;
- **Jan 2017:** contract signed: President Ono & S. Kassim-Lakha, Chairman, Board of Trustees, UCA
- **Funded** by UCA / AKDN, with some “in kind” by UBC, EOAS, Geog.
- **UBC team:** 11 SESs\*, 1 coordinator, 6 departments (Van. & Okanagan)
- **October 2017, May 2018, October 2018:**
  - Three visits,
  - Nine UBC team-members
  - **Tajikistan:** Khorog & environs, Dushanbe. **Kyrgyzstan:** Bishkek, Naryn.
- **Sept 2018:** Prerequisites being taught.
- **Jan 2019:** Two EES courses to be taught (Geol 1 & GIS)
- **Sept 2019:** Remaining EES courses begin.



\*SES: Science Education Specialists, as per FoS's new SES staff positions.

# UBC visits to Central Asia

- Oct 2017 (4 team members):
  - Dushanbe and Khorog, Tajikistan
  - Mostly meet-and-greet ... students, faculty & contributors & colleagues
- May 2018 (4 team members):
  - Khorog (and Dushanbe a little)
  - Road trips
  - Also, “shadow” an MSRI-sponsored community-based conservation study.
- Oct 2018 (3 team members):
  - Khorog – mostly geoscience, including some road trips
  - Bishkek
    - World Mountain Forum 2018 – poster, see <https://goo.gl/NKDj4q>
    - Poster, and meet students, other Mountain Studies academics and practitioners.
    - Meet MSRI, special focus on GIS courses.

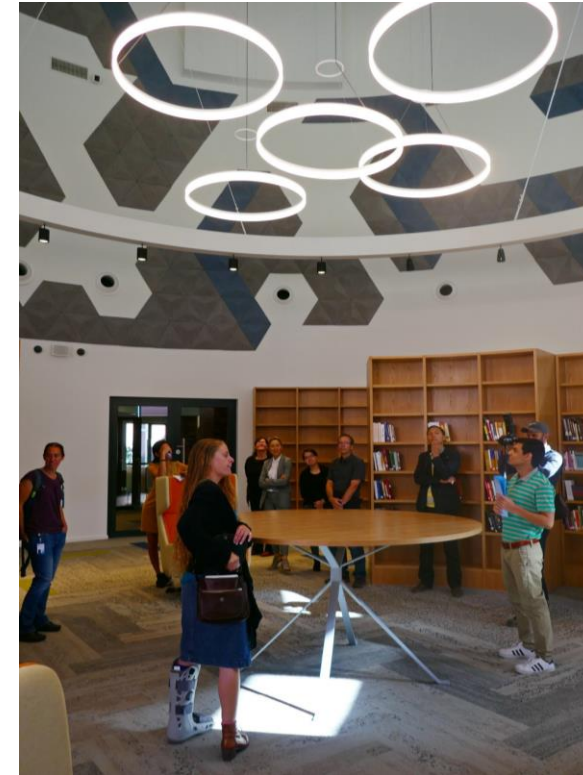
# Khorog Campus



UCA's Khorog campus.  
Student residences.  
Oct 2017.



UCA's Khorog campus  
May 2018.



UBC course developers meet students & faculty, Khorog Campus Library, Oct 2017.



UCA visiting prof. and geology prof. at Idaho State U. David Rodgers, Khorog Campus Oct 2018.



# UCA Khorog campus interiors



# Exploring geographical & cultural context



UBC course developers visit the Barsam Debris Flow, a large landslide in 2015, near Khorog.



Home-stay accommodation in the Pamir mts, during field trip exploring conservation research and mountain society life (May 2018).

# Pamir Mountains: Afghanistan from Tajikistan.



The Tajik–Afghan Friendship Bridge  
Built by AKDN, USA, Norway, 2004.

[https://en.wikipedia.org/wiki/Tajik%E2%80%93Afghan\\_Friendship\\_Bridge](https://en.wikipedia.org/wiki/Tajik%E2%80%93Afghan_Friendship_Bridge)



# UCA campus at Khorog, Tajikistan

<http://www.ucentralasia.org/>

<https://blogs.ubc.ca/eescourses/>



# EES program structure

Skip?

Approx:

**EES Program:** Courses & curriculum; Individual & team efforts

Year 3

PreReq1

PreReq2

PreReq3

Year 4

**Required**

RB1

RB2

RG1

RG2

RG3

RG4

4 req'd geosci

RE1

RE2

RE3

RE4

RE5

5 req'd  
geog/environ

Year 5

G1

G2

G3

G4

**Elective - Geosci**

**Elective - ENVR**

E1

E2

E3

E4

# Project courses and UBC team

Skip?

**Innovative combination of hard science and human social and environmental subjects**

Term	EES course schedule proposed, September 2018	
Sep-18	Physics	<b>Colour key</b> prerequisites For all: geog / envr For all: geoscience advanced geog / envr advanced geoscience
	Ecology I - Evolutionary Ecology	
Jan-19	Chemistry I - Physical Chemistry	
	Introduction to GIS and Remote Sensing	
Sep-19	Introduction to Geology and Earth Processes	
	Mixed Research Methods	
	Surface Processes in Mountain Environments	
	Science, Impact, and Complexity of Climate Change	
Jan-20	Applied Ecology (field work)	
	Introduction to Geological Materials and Resources	
	Ways of Knowing: Mountain Environments in Thought and Practice	
	Advanced GIS and Remote Sensing	
Sep-20	Sediments, Stratigraphy and Hydrocarbon Resources	
	Minerals, Petrology and Mined Resources	
Jan-21	Hydrology & Hydrogeology	
	Natural Hazards and Risk Management in Mountain Regions	
	Environment and Development in Mountain Regions	
Jan-21	Conservation Science - move to a fall term? (field work)	
	Environmental Impact and Risk Assessment	
	Environmental Governance: Water, Air, Land, and Biosphere	
	Geochemistry	
	Geodynamics and Structural Geology	

## UBC team (EOAS and Geography)

Francis	Jones	UBC coordinator
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Elizabeth	Gillis	Chemistry
Linda	Strubbe	Physics
Erica	Jeffery	Ecology
Arthur "Gill"	Green	GIS x 2
Tara	Holland	Environ. / Geography x 6
Chris	Kopp	Conservation & ecology x 2
Lucy	Porritt	Geology x 2
Phil	Hammer	Geology x 2
Ozlem	Suleyman	Geology x 2
Brendan	Hunt	geoscience & hydrology
Fatima	Mannapbekova	Research assistant (Geog)
Qingyang	Liu	Undergrad assist (Geog)
Akash	Turkay	Undergrad assist (Min. Eng)
Iram	Malik	Undergrad assist (Chem. Eng)

# Project structure

Skip?

