

**Flexible Pre-Major in Biology (Analysis Project)**  
**Interim Report 14 May 2012**  
**Presented for discussion at Biology Articulation Committee Meeting**  
**at College of the Rockies**

Biology represents a very large discipline within the BC Transfer system. It provides a number of courses which serve many different ends depending on which path a student wants to take. Biology as a discipline has subfields that were developed over the years and many institutions began the development of paths at the larger institutions. It is interesting to note that some large institutions are now eliminating the subfields. Smaller rural institutions have tried to offer a limited selection of courses to match the universities.

The number of receiving institutions has increased dramatically during the last ten years. With that increase has come more specialty courses. Those institutions that are primarily sending ones are now challenged more than ever to offer students a core of courses to let them seamlessly transfer into third year. The students that begin their education at the colleges and later transfer to the universities perform very well, as BCCAT's own studies have shown

Some specific challenges for transfer students have been the fact that some of the small colleges are only able to offer a small selection of second year courses due to smaller class size and manpower limitations caused by funding constraints. Due to the variety of courses required at institutions, exact matching for all is not possible at smaller colleges. As a result, students sometimes receive unassigned second year credit for some courses which can still hamper them from entering third year.

After much online research, review of articulation reports and contact with committee members, the information for the project was gathered. During the process, information was uncovered that prior to starting the project, most were unaware of. It highlighted some unique offerings at the individual receiving institutions. As well, in the middle of this gathering process, the annual budget announcements were made. These budget cuts represent further limitations to the transfer of first and second year courses to the universities.

**Core Courses Required For Transfer Into The Third Year Of B.Sc. Programs At Universities**

The typical courses offered in second year are: Cell Biology, Ecology, Genetics, Biochemistry, Microbiology, Vertebrate Biology, Invertebrate Biology, Vascular Plants and Nonvascular Plants. Some recent additions at the university level are Physiology, Data Analysis and Developmental Biology. Table 1 shows the second year courses that are needed to move into third year at the universities. You can easily observe that three second year courses are needed at almost all institutions within the province. These are highlighted in green and represent cell biology,

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ecology and genetics. In a few cases they are offered at the third year level instead of second year. This set could be viewed as a common core that could be used for a flexible pre-major.

Table 1. Second year courses offered at institutions that award full 4 yr biology degrees

Institutions	Cell	Ecology	Genetics	Physio	Biochem	Micro	Vert	Botany	Data	Devel	specialty
	Bio						Bio		Anal		
Athabasca	3rd	Y	Y			Y	Y				Hum sex / wildflowers
Kwantlen	Y	Y	Y		Y	REC					
SFU	Y	Y	Y		Y						
TRU	Y	Y	Y			Y					evol body plans /landplants
TRU OL	Y	3rd	Y		3rd			3rd			
Trinity West	Y	3rd	3rd					Y			marine/ plant envir
UBCO	Y	Y	3rd			y	Y	Y	Y	Y	one of each - Still has streams
UBCV	Y	Y	Y	Y		Y	Y	Y			either one of each or two of one
UFV	Y	Y	Y	Y	Y	Y	3rd (2)	3rd			
UNBC		Y	Y			Y		Y			
UVIC	Y	Y	Y				3rd				topic/organ
VIU	Y	Y	Y		Y	Y		Y			
<u>Codes</u>						<u>Shading code</u>					
Y= yes they offer this course						Green = Common courses at most institutions					
= they do not offer this course						Red = Unique courses					
REC= Recommended						White = Traditional courses					
3rd= offered at 3rd year											
(2) = offered over 2 semesters						<u>Speciality course codes</u>					
						evol body plans= evolution of body plans					
						landplants= evolution and ecology of land plants					
						topic/organ= topics in organismal biology					

## **Unique Courses Which Cause Difficulty For Transfer Into B.Sc. Programs At Some Universities**

Those cells that are shaded red in Table 1 currently provide impediments to transfer. These represent a specific course(s) that only the receiving institution offers.

These specific courses are:

- UBCV's new Physiology course
- UBCO's Data Analysis course and a Development course
- TRU's Evolution of Body Plans course and Evolution and Ecology of Land Plants course
- UVIC's Topics in Organismal Biology

The development course is an offering that is traditional at the upper levels. Each of the remaining courses represents unique offerings that would prevent seamless transfer from other institutions. Small institutions that are only able to offer a few courses are in an impossible situation when the receiving institutions require different unique course mixtures. Small institutions have three options:

- 1) Try to serve the greatest number of universities.
- 2) Align with just one single institution. That in itself limits transfer possibilities.
- 3) To have the ability to transfer with a flexible pre-major.

## **Other Traditional Courses That Are Needed Toward Transfer Into Some Institutions**

Those courses that are not shaded fall into this category. They represent a mix of courses that have been an important component in the study of biology over the decades. Some are more important for those exploring professional programs and degrees with a cellular/molecular focus. The other ones are more important for ecological or an organismal concentration.

## **Courses That Two Year Institutions Offer**

Table 2 highlights the courses that have been offered by the smaller rural institutions and larger colleges that offer only two years of university studies. Once again the green highlighting represents the common core courses identified in the Table 1. Most institutions offer these courses. Both CNC and COTR were missing one this past year. Northern Lights were only able to offer one.

Table 3 provides a look at the projected offerings at the smaller two year colleges based on budgets for the upcoming year. It is becoming more difficult to serve many masters. The blue shading highlights what is left for the next academic year.

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Table 2. Second year offerings at institutions that offer two years of biology for the transfer to other institutions.

This table represents the situation from academic year 2011-2012.

Institutions	Cell Bio	Ecology	Genetics	Physio	Biochem	Microbio	Vertebrat	Botany	Data Anal	Devel	specialty
Camosun	Y	Y	Y			Y					
College New Caladonia	Y		Y		Y	Y					
COTR	Y	Y			Y		Y				
Douglas	Y	3rd	3rd		Y	Y	3rd				
Langara	Y	Y	Y		Y	Y	Y	Y			Pop ecology
North Island College	Y	Y	Y		Y	Y					
Northern Lights		Y									
NorthWest	Y	Y	Y		Y		Y				
Okanagan	Y	Y	Y		Y	Y	Y	Y	Y	Y	water related
Selkirk	Y	Y	Y		Y	Y	Y	Y			

Codes  
 Y= yes they offer this course  
 = they do not offer this course  
 3rd= offered at 3rd year

Shading code  
 Green= core courses

Table 3. Second year offerings at institutions that offer two years of biology for transfer to other institutions.

This table represents the situation after March 2012 budget cuts.

Institutions	Cell Bio	Ecology	Genetics	Physio	Biochem	Microbio	Vertebrat	Botany	Data Anal	Devel	specialty
Camosun	Y	Y	Y			Y					
Capilano	Y	Y	Y		Y	Y	Y	Y			
College New Caladonia	0		0		0	0					
COTR	Y	Y	Y				Y				
Douglas	Y	3rd	3rd		Y	Y	3rd				marine
Langara	Y	Y	Y		Y	Y	Y	Y			many
North Island College	Y	Y	Y		Y	Y					
Northern Lights		0									
NorthWest	0	0	0		0		0				
Okanagan	Y	Y	Y		Y	Y	Y	Y	Y	Y	water
Selkirk	0	0	0		0		0				

Codes  
 Y= yes they offer this course  
 0= course not scheduled to be offered in the next academic year  
 3rd= offered at 3rd year

Shading Code  
 Blue= courses still offered in the next academic year

## Could a Flexible Pre-Major Overcome These Difficulties?

The Analysis Project has clearly highlighted three core courses which must be in any second year transfer within Biology. The other traditional course groups might be a logical mix to round out or meet the needs for transfer students moving into 3<sup>rd</sup> year. It could be possible to include one course from each group, or two from the same group. That would put the possible pre-major at 5 courses. Does it need to be five, or could it be four? Five represents a challenge for some small institutions. The unique courses are the real limiters. What could the flexible pre-major look like, three core courses plus two others or three core plus one to enter third year. If the above is agreeable, the pre-major would require 4 or 5 second year courses. Due to limited college offerings, the possibility of 4 taken at the colleges with a fifth to be taken once transfer is complete, would build in flexibility similar UBCV's updated planning form.

## Discussion at the 2012 Biology Articulation meeting

The discussions that we had at our meeting were very productive. This information was presented to the entire group and discussed quite thoroughly. The consensus around the table was that the 3 core courses were clear. Many were surprised, but the data highlighted them. The group was able to discuss what the pre-major would mean and that it would only specify the biology course requirements. We discussed the importance of Organic Chemistry, but the pre-major only specifies the biology courses so students would need to be informed that the chemistry is important.

The committee ended their discussions by moving the following.

**Motion: To submit the interim report subject to Betty's adjustment to the TAC committee this Friday.**

**-Blythe Nilson**

**-Seconded-Larry Anthony**

**Carried**

### Main Contractor with contact information

Dr. Betty Mosher  
Biology Department  
College of the Rockies  
8500 College Way  
Cranbrook, BC V1C 5L7  
[mosher@cotr.bc.ca](mailto:mosher@cotr.bc.ca)  
250-489-2751 ext. 3479

### Articulation Committee Contact Name(s) and Information

Blythe Nilson  
Chair, Biology Articulation Committee  
Biology Department  
University of British Columbia Okanagan  
Kelowna, BC