Integrative Science academic program

DRAFT DOCUMENT #1 (of 5): reinvigoration – overview of work required

FIVE DRAFT DOCUMENTS

1. work required – overview
2. new courses required – “Science in Community” (SciC)
3. relationships – looking to AFN’s document on supporting students transitioning to PSE, CCL-AbLKC’s *First Nations Holistic Lifelong Learning Model*, and APCFNC/AAEDIRP Elders Project’s Recommendations on *Honouring Traditional Knowledge*
4. relationships – what is Integrative Science ... what is science?
5. relationships – transdisciplinarity

www.integrativescience.ca

NOTE about this document:

- Prepared in Winter 2014, this document along with others sought to convey understandings pertaining to *Integrative Science as a concentration with innovative MSIT science courses* within the *Bachelor of Science Community Studies (BScCS)* four year degree at Cape Breton University. They were prepared by Cheryl Bartlett to aid anticipated group discussions about potentially reinvigorating the Integrative Science concentration and the BScCS degree, given that both had become non-functional around 2010. The documents were not used and reinvigoration of Integrative Science and the BScCS did not occur.
- Collectively, the documents provide an overview of: (1) the work and resources that would have been required in order to proceed towards an envisioned reinvigoration of Integrative Science, and (2) the overall nature and evolving relationships for Integrative Science from its original vision and configuration as an academic program in the late 1990s guided by Two-Eyed Seeing through to its relationships with national developments in the 2000s and early 2010s. The period 1999 to the mid-2000s saw remarkable success for Integrative Science, including numerous students enrolled in the MSIT courses created for Integrative Science; several students graduate with a BScCS – Integrative Science degree; eleven students earn NSERC-USRAs and some students receive other scholarships; many students engaged in community workshops, summer research projects, and elementary school science outreach; and the Integrative Science program itself receive a national award of recognition from the Canadian Council on Learning.

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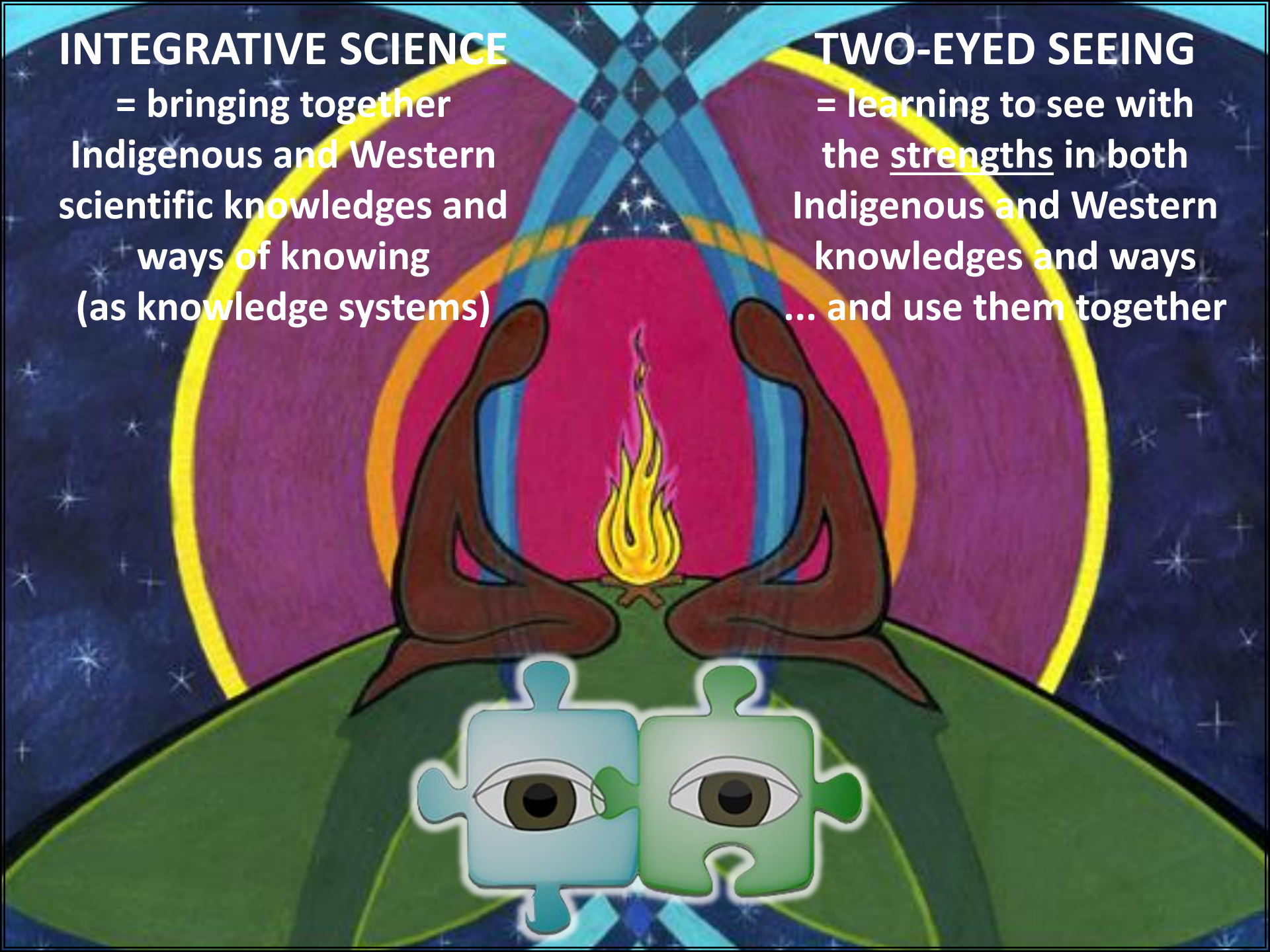
INTEGRATIVE SCIENCE

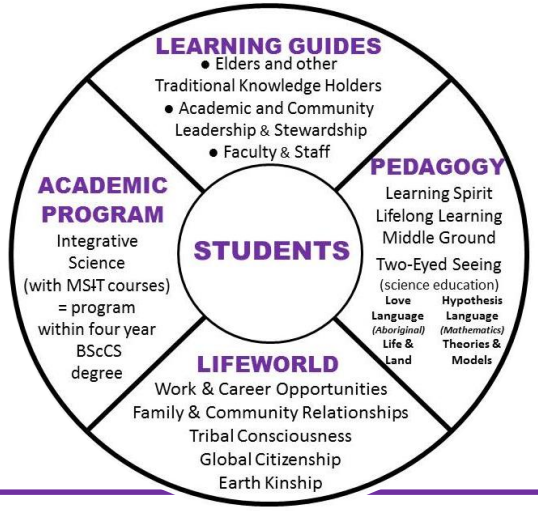
= bringing together Indigenous and Western scientific knowledges and ways of knowing (as knowledge systems)

TWO-EYED SEEING

= learning to see with the strengths in both Indigenous and Western knowledges and ways ... and use them together

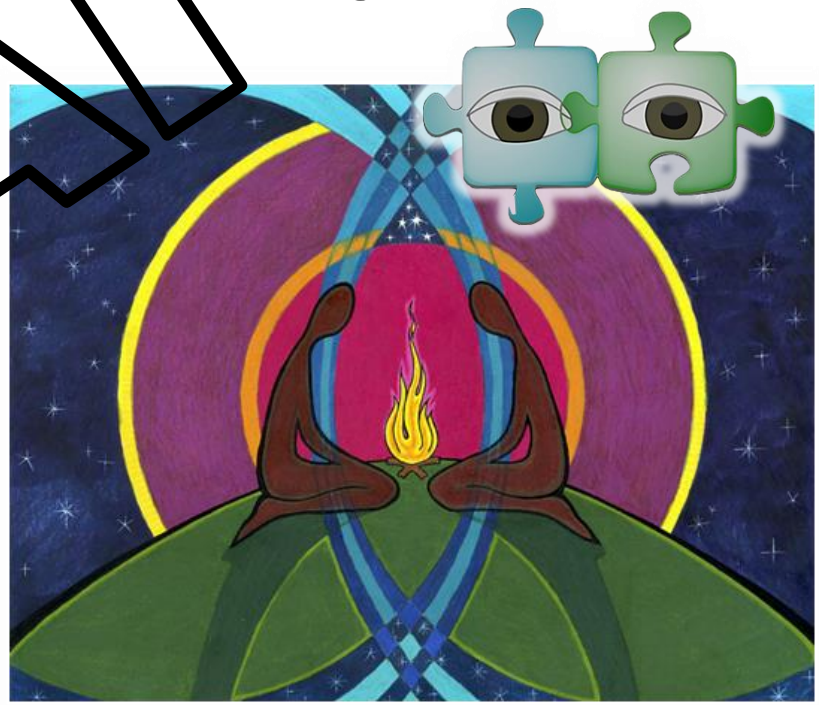


a document to share "information, resources, positioning, and congruencies" towards better and broader understandings of Integrative Science and Two-Eyed Seeing



A series of documents has been created to help justify and contextualize efforts and approaches towards revitalizing the Integrative Science academic program, including CBU's Bachelor of Science Community Studies (BScCS) degree which houses Integrative Science.

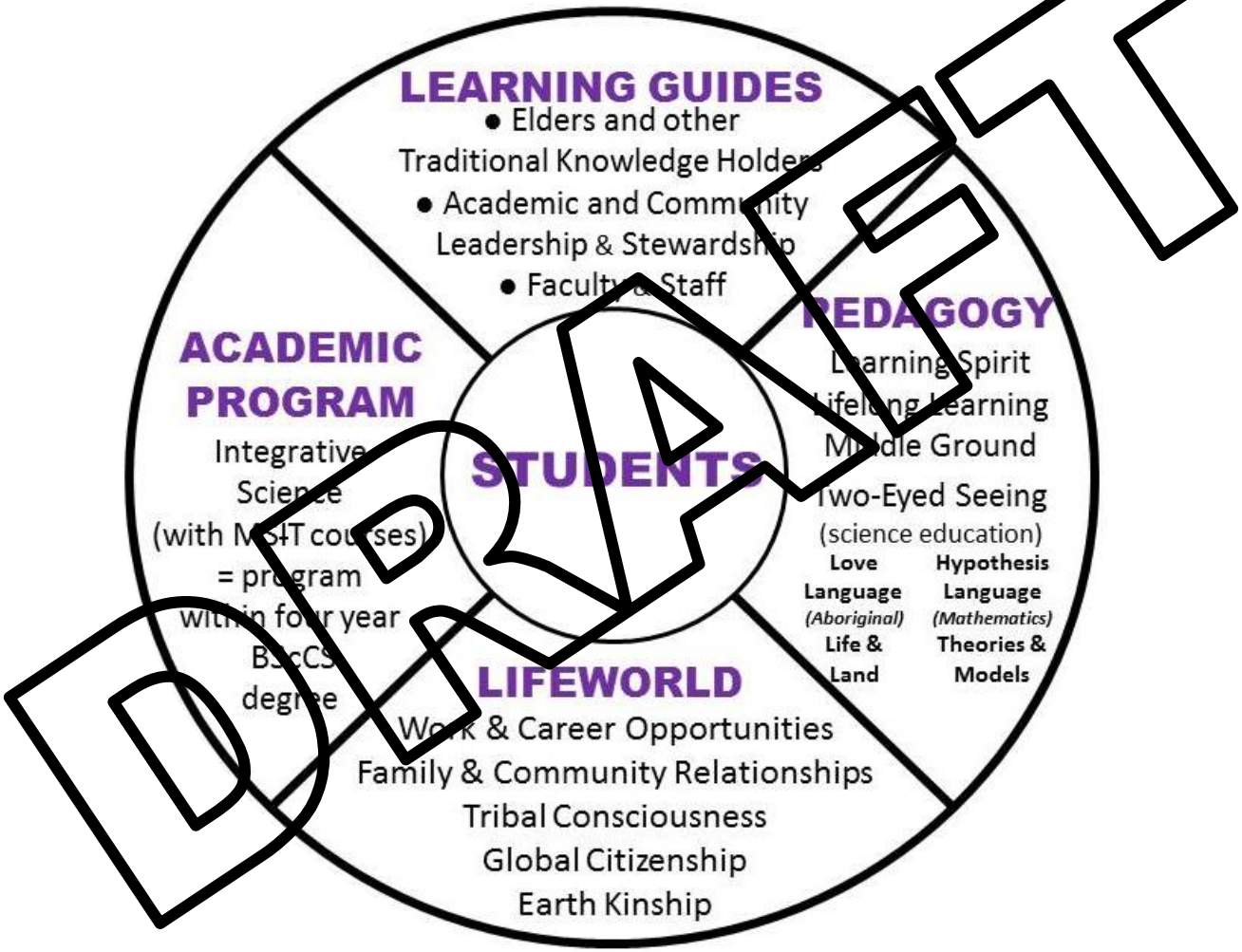
The documents in the series rely heavily on the use of images, congruent with the request that Integrative Science encourage learning in a visual way, a request made by Mi'kmaq community members when the academic program was conceived in the mid-1990s. The ability to read images and ponder a visual landscape – i.e. to sense patterns, changes, and resonances, and begin to interpret them – is both an Aboriginal traditional skill and a modern science skill … i.e., an Integrative Science skill. Oral communication – a second skill and one particularly emphasized in Aboriginal traditional ways – can then facilitate the creation of shared meaning. As such, it becomes a desirable, although not absolutely essential, travelling companion for visual learning and visual thinking.



SUMMARY: This document ***"overview of work required"*** provides big picture understandings for the BScCS degree structure and some of the details in the many considerations that need to be made to bring both the degree and the Integrative Science concentration back to operational status. Given that the degree's name features "community" (Bachelor of Science Community Studies = BScCS), the document opens with an extract from the AFN 2012 report "Supporting First Nation Learners Transitioning to Post-Secondary" about the importance of educational work as originating in the community. How this plays out within the degree's four structural components (core, concentration, electives, and work placements), or subparts thereof, is outlined. A pie chart is provided to show distribution, by component or subpart, of the degree's 120 total formal academic credits. The overall nature of the work required for each degree component (or subpart) is summarized as "develop anew, redevelop, review and/or revitalize" and more explanation for each subsequently provided. Attention is drawn to skills gaps recently identified by ECO Canada, in conjunction with the possibility that the degree's core could help address them, both in the new SciC courses envisioned and in the core's pool of other required courses - a pool originally assembled with the intent to help equip students with skills and perspectives required for life and work in today's society (i.e. communities). Work placements in the degree further emphasize linkages with community and are intended to provide informal learning opportunities (no academic credits). The overall focus for MS~~I~~T electives – the natural world – is shown as congruent with the sources and domains of knowledge identified in the CCL-FN Holistic Lifelong Learning Model. MS~~I~~T electives are itemized and current status indicated. The current pool of eligible courses in the technology subpart of the concentration is indicated. The compulsory MS~~I~~T (distinct from elective MS~~I~~T) courses in the other subpart of the concentration are also itemized. A synopsis is provided of "science" distribution within the degree's four structural components. The national "star status" recognition given to the Integrative Science program by CCL in 2008 is noted, along with the hope that the program can regain such. The need is indicated to examine positioning, by year, of the MS~~I~~T compulsory courses (along with their curricular content) and also of the envisioned new SciC courses – i.e. the suite of courses that could be said to make up the backbone of the Integrative Science program. The document concludes by drawing attention to the fact that MS~~I~~T and SciC courses have potential beyond Integrative Science, beyond CBU's BScCS degree, and beyond CBU, and that diverse delivery formats can and should be considered.

Integrative Science academic program

outline of work required to
review – redevelop – revitalize – reconfigure
all components, including BScCS degree



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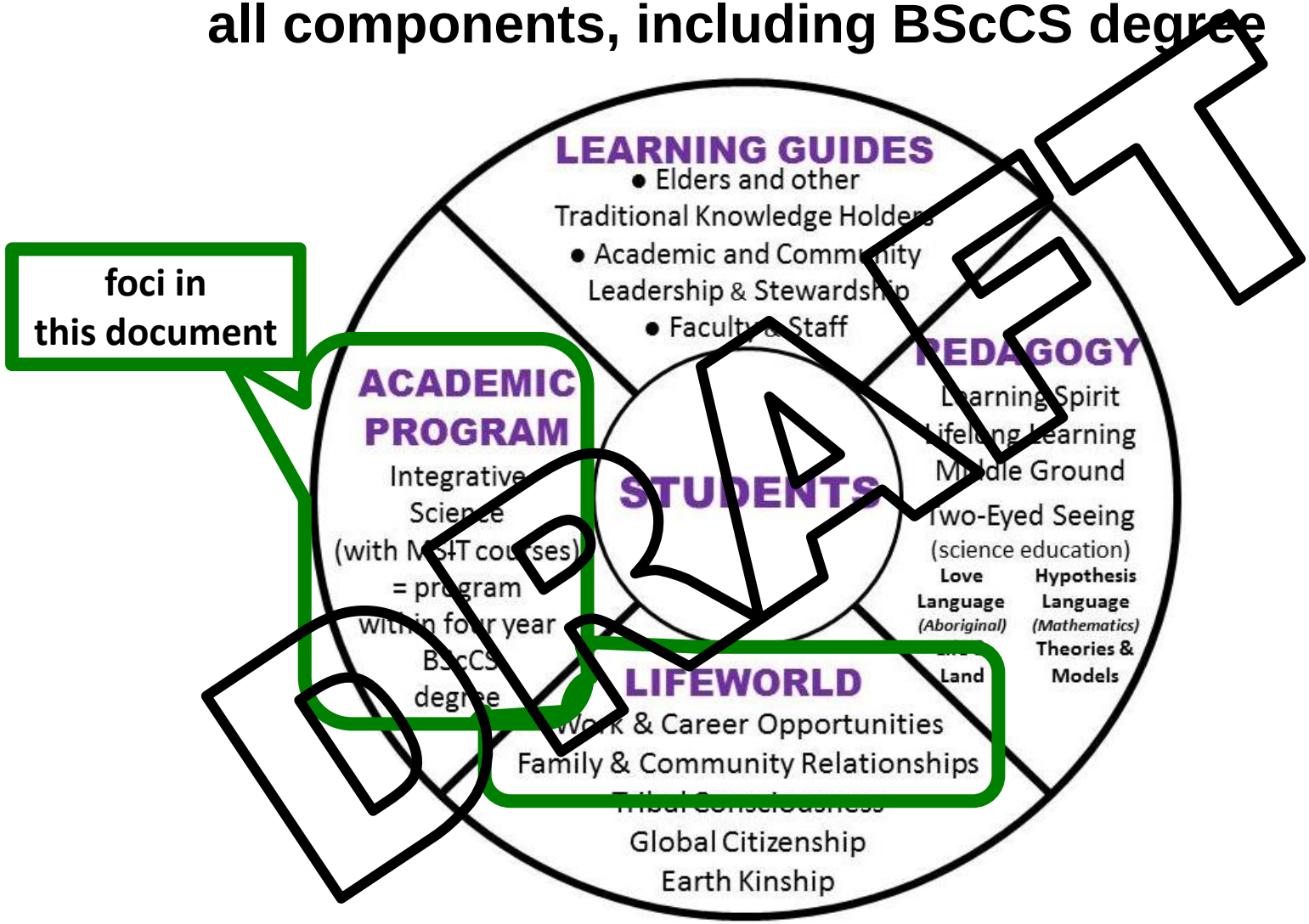
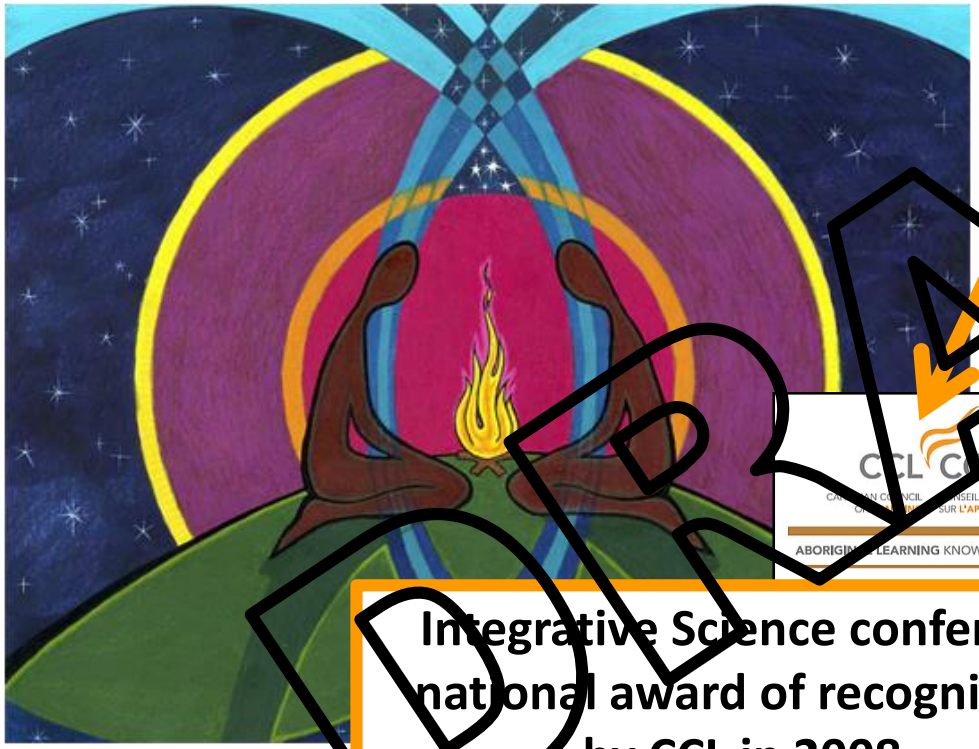


Considerable revitalization work is required to regain

"star status" (2008)



Integrative Science conferred national award of recognition by CCL in 2008 for Aboriginal Learning

for

BScCS Integrative Science

from

Canadian Council on Learning (CCL)

DRAFT

Considerable revitalization work is required …

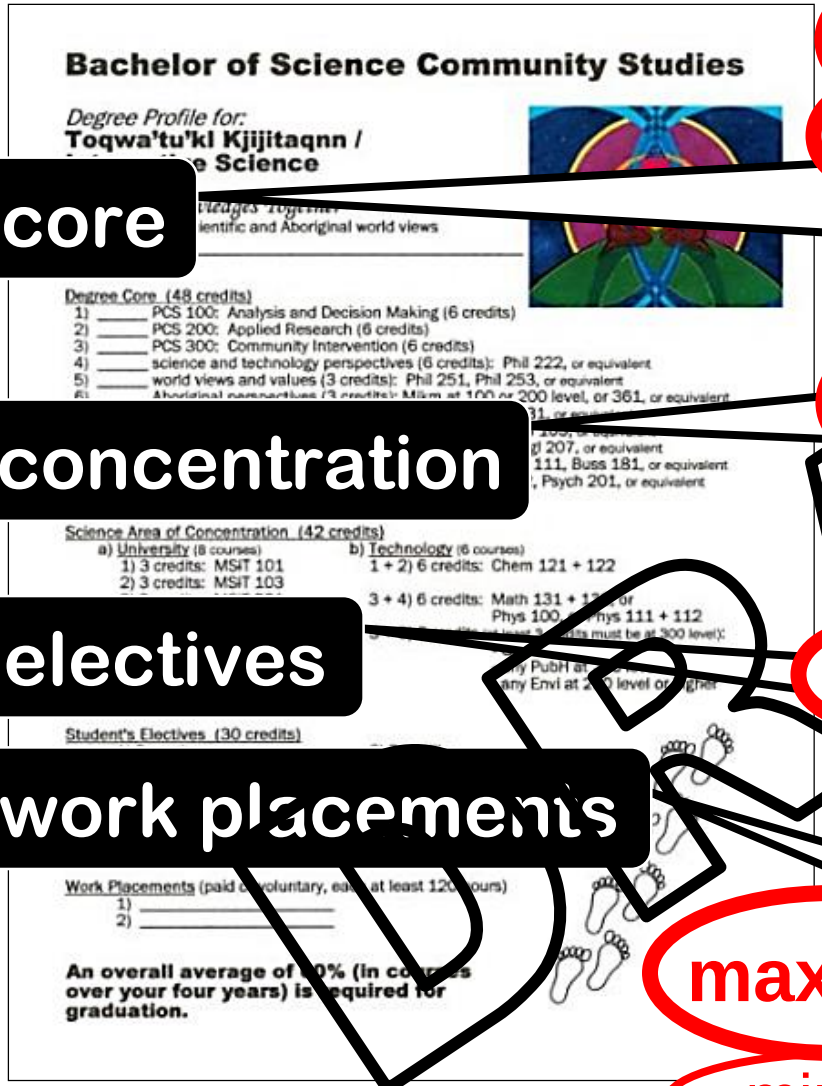
FOR THE WHOLE OF THE BScCS 4 YEAR DEGREE at CBU

INTEGRATIVE SCIENCE IS ONE OF THREE DEFINED CONCENTRATIONS IN THE BScCS DEGREE.

THE DEGREE WAS APPROVED BY BOTH CBU AND MPHEC IN THE LATE 1990's AS A "SCIENCE" DEGREE.

BScCS: a 4 yr SCIENCE degree

RED = science credits



core

concentration

electives

work placements

18

15*

42

0-30

max.105

min. 60

CREDITS: 48
Science: SciCS (new)
Topics: perspectives* & skills*

CREDITS: 42
Science: university & applied (tech)

CREDITS: 30
Science: all, some, none

CREDITS: 0
Science: experience

does not include any credits from perspectives, skills, or electives

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BScCS: a 4 yr SCIENCE degree

Bachelor of Science Community Studies

Degree Profile for:
Toqwa'tu'kl Kjijitaqnn / Integrative Science

Bringing Knowledges Together
... from Western scientific and Aboriginal world views

Degree Core (48 credits)
1) _____ PCS 100: Analysis and Decision Making (6 credits)
2) _____ PCS 200: Applied Research (6 credits)
3) _____ PCS 300: Community Intervention (6 credits)
4) _____ science and technology perspectives (6 credits): Phil 222, or equivalent
5) _____ world views and values (3 credits): Phil 251, Phil 253, or equivalent
6) _____ Aboriginal perspectives (3 credits): Mikm at 100 or 200 level, or 361, or equivalent
7) _____ business perspectives (3 credits): Buss 111, Buss 231, or equivalent
8) _____ public communication (3 credits): Comm 103, Comm 105, or equivalent
9) _____ effective writing (6 credits): Engl 100, Engl 205 + Engl 207, or equivalent
10) _____ computer literacy (3 credits): Phil 115, Comp 102 or 111, Buss 181, or equivalent
11) _____ statistics (3 credits): Math 135, Math 335, Buss 182, Psych 201, or equivalent

Science Area of Concentration (42 credits)
a) University (8 courses)
1) 3 credits: MSIT 101
2) 3 credits: MSIT 103
3) 3 credits: MSIT 201
4) 3 credits: MSIT 203
5) 3 credits: MSIT 301
6) 3 credits: MSIT 303
7) 3 credits: MSIT 401
8) 3 credits: MSIT 401

b) Technology (6 courses)
1 + 2) 6 credits: Chem 121 + 122
3 + 4) 6 credits: Math 131 + 1[illegible] or Phys 100 [illegible]hys 111 + 112
5 + 6) 6 credits (at least 3 credits must be at 300 level):
- Ge[illegible]111
- any PubH at 2[illegible] level or higher
- any Envi at 2[illegible]0 level or higher

Student's Electives (30 credits)
1) 3 credits: _____
2) 3 credits: _____
3) 3 credits: _____
4) 3 credits: _____
5) 3 credits: _____
6) [illegible] credits: _____
7) 3 credits: _____
8) 3 credits: _____
9) 3 credits: _____
10) 3 credits: _____

Work Placements (paid or voluntary, each at least 120 hours)
1) _____
2) _____

An overall average of [illegible]0% (in courses over your four years) is required for graduation.

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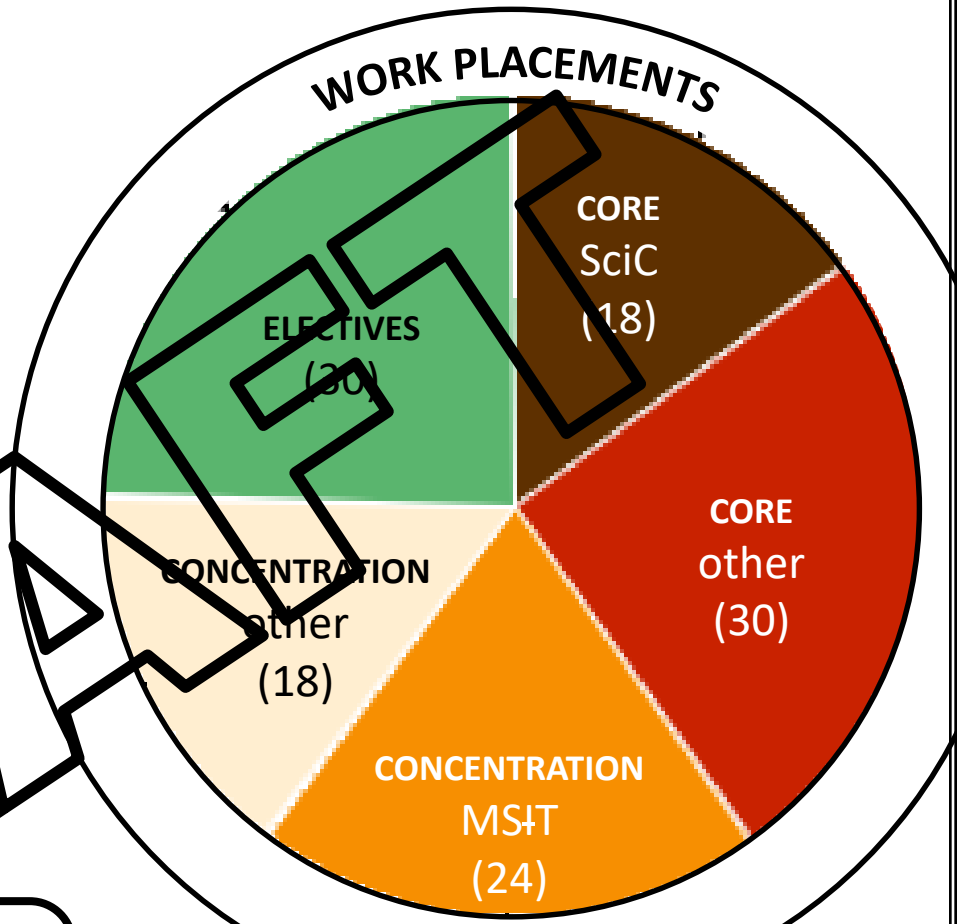
counselling form for BScCS - Int Sci
(original, i.e. out-of-date)



pie chart showing fixed components in BScCS, using Int Sci concentration

BScCS: a 4 yr SCIENCE degree

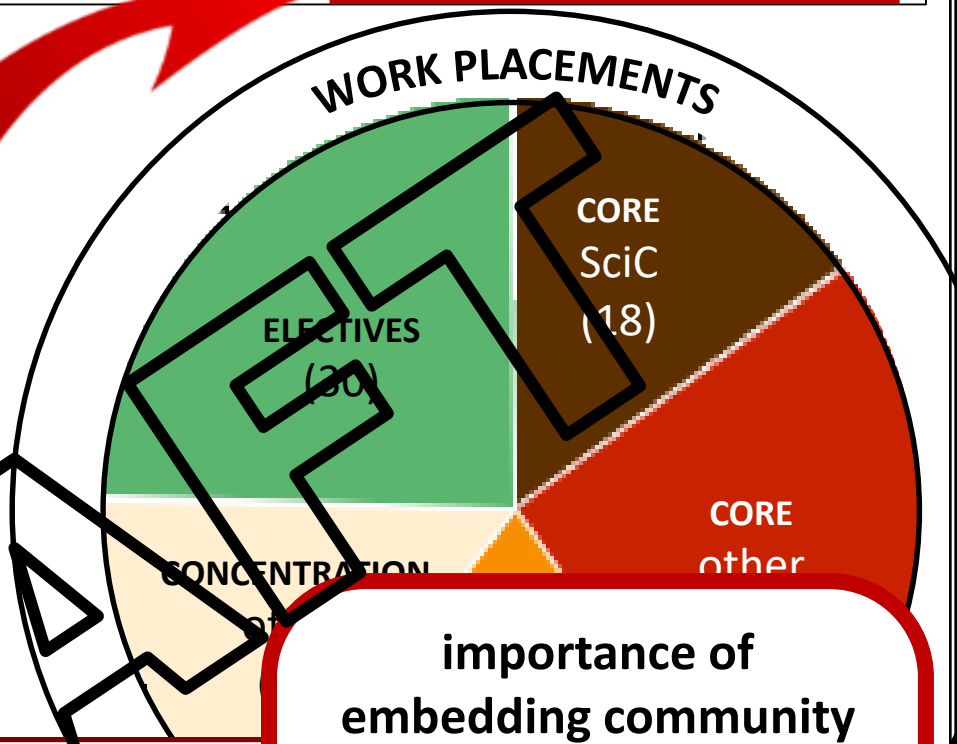
Bachelor of Science Community Studies

Assembly of First Nations
Education, Jurisdiction, and Governance

* Supporting First Nations Learners Transitioning to Post-Secondary

Final Report
March 31, 2012

page 36



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"It is very important to think about our work as originating in the community because it is those kinds of processes that will take root and will effect long-term change for the overall social justice needs of our communities."

S. Brenda Small, Negahneewin College

importance of embedding community dimensions throughout PSE programming and in support services for First Nations learners
(see UC document that examines AFN 2012 report)

* http://www.afn.ca/uploads/files/education2/postsecondarytransitionsreport.pdf

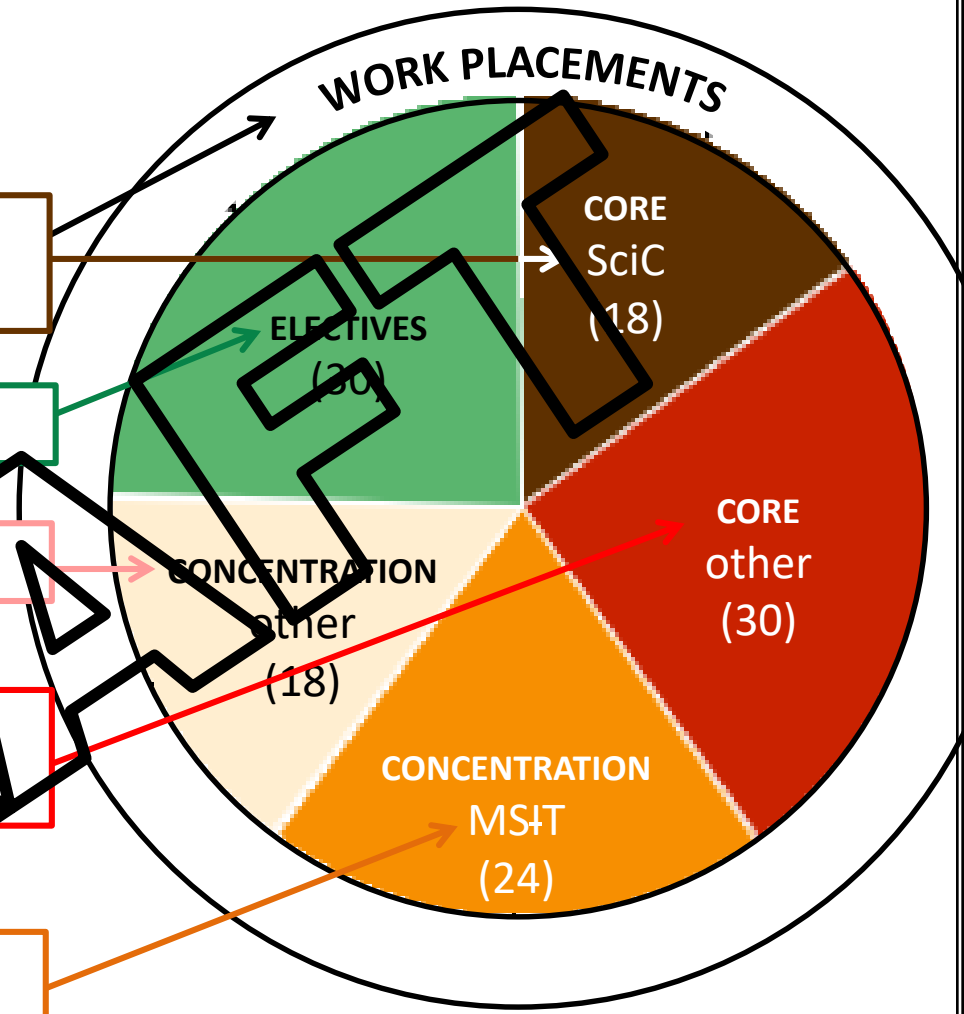
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE COMPONENTS

(ROLE)

- **Community science needs or issues**
  inquiry courses and work placements
- **Student options:** MSIT electives or other
- **Additional science or technology**
- **Additional skills and topics courses**
  for modern lifeworld, local-global
- **Integrative Science**
  MSIT courses (compulsory)



number in parenthesis
= credits within 120 total credit degree

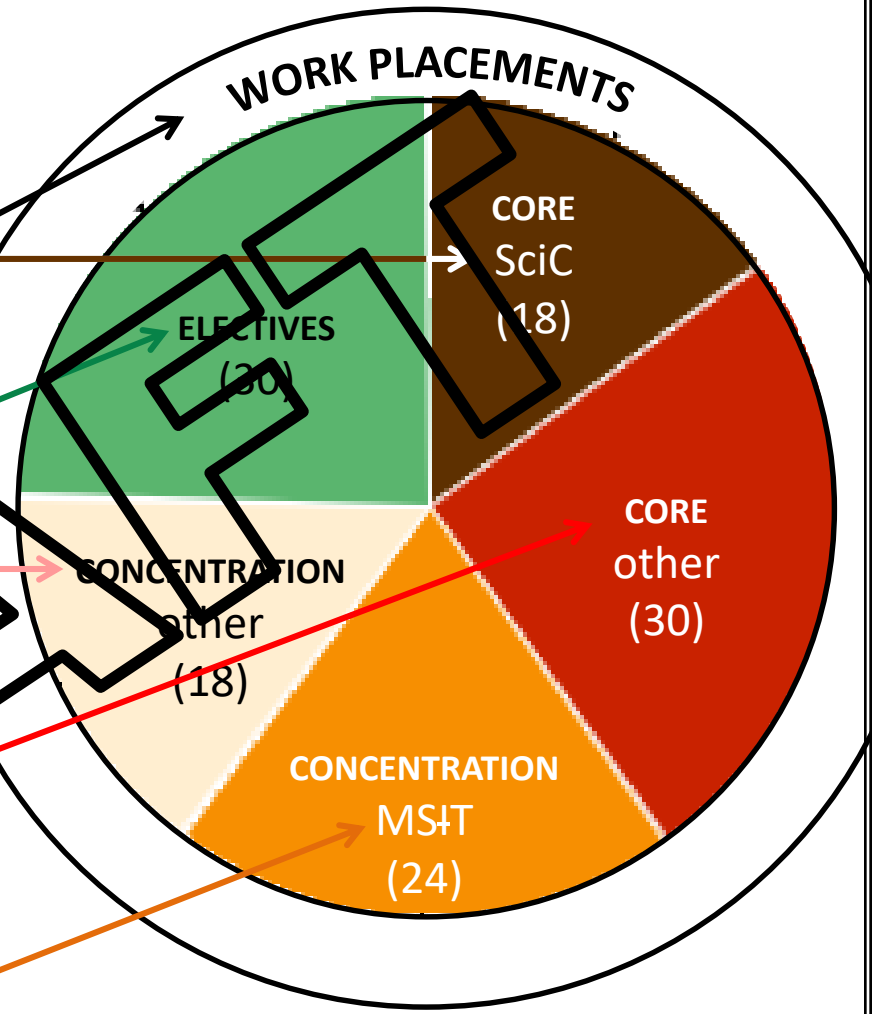
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE COMPONENTS

(STRUCTURE)

- core
- work placements
- electives
- concentration
- core
- concentration



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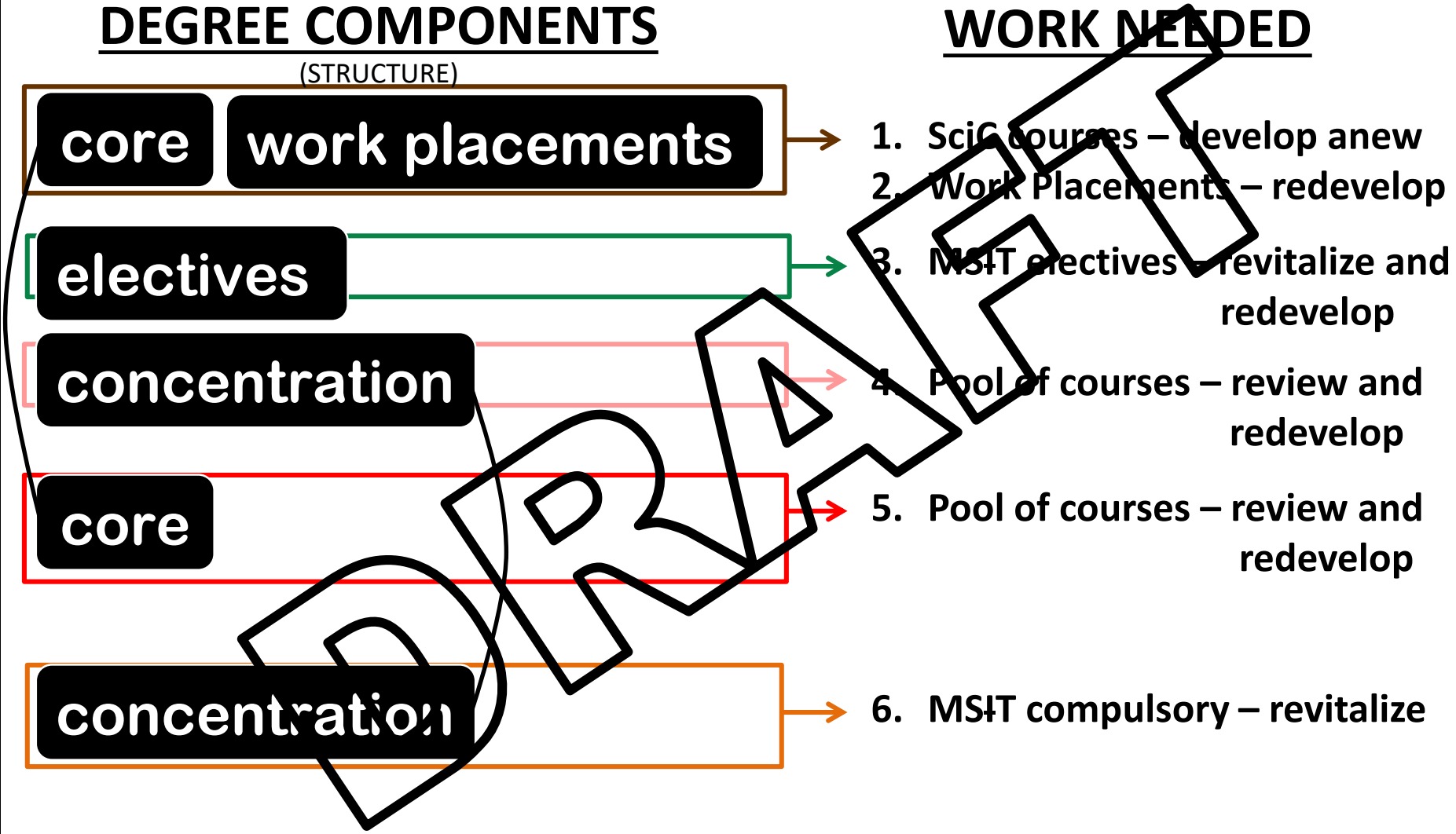
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies



Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE COMPONENTS (ROLE)	WORK NEEDED
• **Community science needs or issues** inquiry courses and work placements	1. SciC courses – develop anew 2. Work Placements – redevelop
• **Student options:** MSIT electives or other	3. MSIT electives – revitalize and redevelop
• **Additional science or technology**	4. Pool of courses – review and redevelop
• **Additional skills and topics courses** for modern lifeworld, local-global	5. Pool of courses – review and redevelop
• **Integrative Science MSIT courses** (compulsory)	6. MSIT compulsory – revitalize

Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

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(ROLE)

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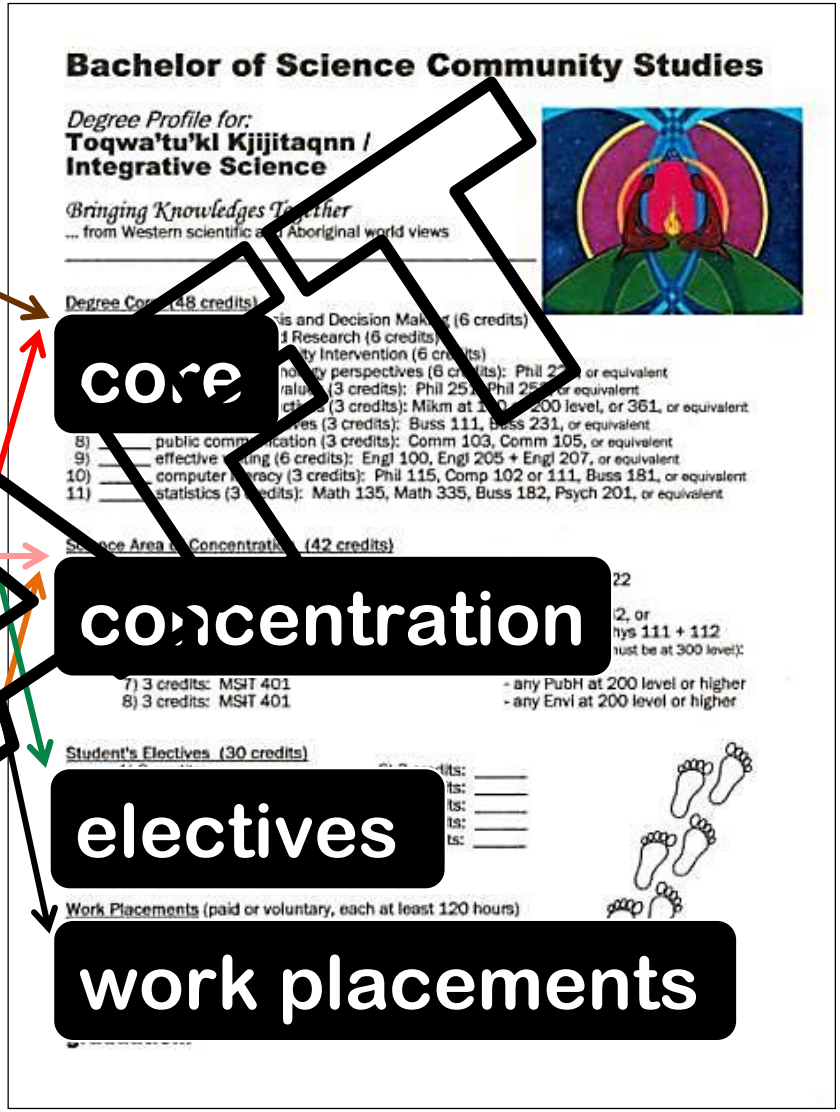


Integrative Science academic program

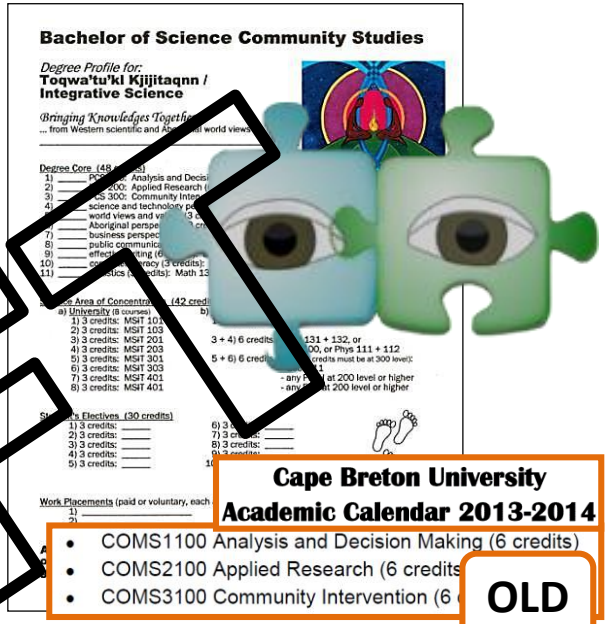
within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #1:

core

- **develop new "Science in Community (SciC)" courses for science inquiry for community-based issues or needs, using (18 credits required in core)**

Note: The new SciC courses will rebuild the degree core to achieve vision for "science learning with and for community" as per degree submission to, and approval by, CBU Academic Council and MPHEC in 1997 and 1999, respectively (plus 1999 and 2001 re Integrative Science).



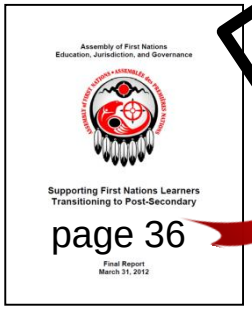
DRAFT

NEW: SciC courses, N = 4 levels (x 2/level), each 3 credits *(rebuild OLD 3 x 6 credit courses)*

→ guiding principle: ***Two-Eyed Seeing*** as per that of Mi'kmaq Elder Albert Marshall

→ approach: ***transdisciplinary methodologies + community engagement methodologies***

→ embedded additional: ***entrepreneurship and business linkage***



"It is very important to think about our work as originating in the community because it is those kinds of processes that will take root and will effect long-term change for the overall social justice needs of our communities."[1]

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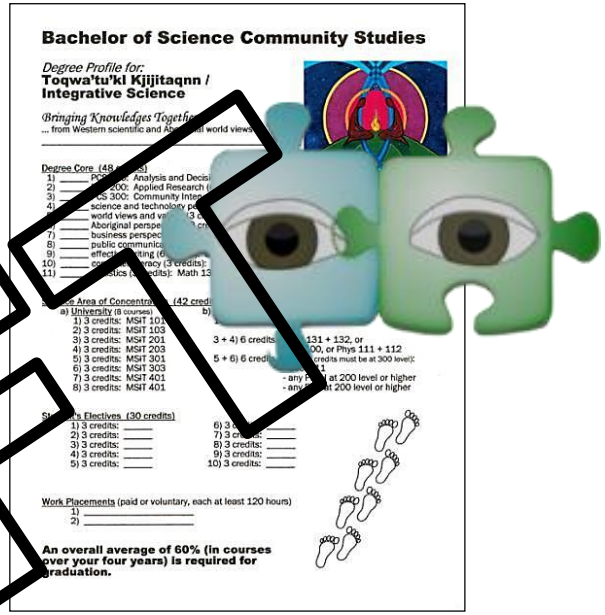

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- "transdisciplinary" (TD) as such is becoming the "acceptable way" by which the natural sciences community is giving itself permission to engage with community knowledge and community knowledge holders
- "community engagement" with special focus on Indigenous community processes, protocols, and partners plus also accommodate understandings of other approaches
- entrepreneurship and business linkages

Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

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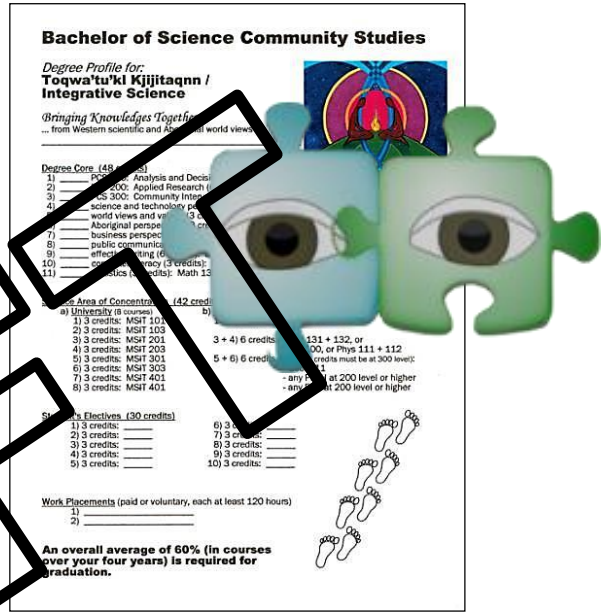

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According to ECO Canada's recent environmental study titled **Defining the Green Economy**, businesses have identified 3 green skill gaps that are needed in the environment industry:

1. **Technological change**
2. **Knowledge of sustainable development**
3. **Interdisciplinary thinkers (Interdisciplinary ≈ Transdisciplinary)**

ECO CANADA
Environmental Careers Organization

for explanation, see next section on "core"

Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

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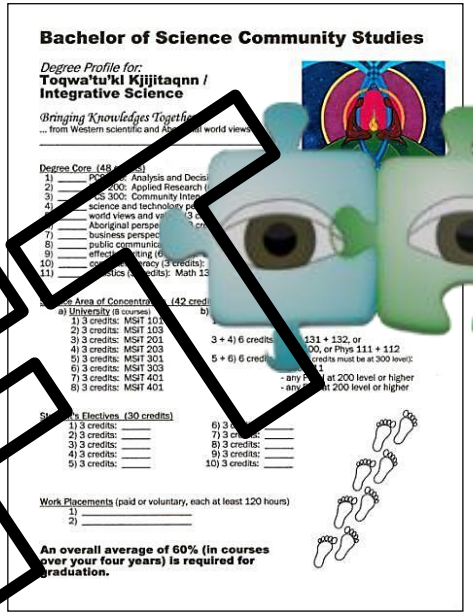

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additional information in two other documents:

1) New Science in Community (SciC) courses

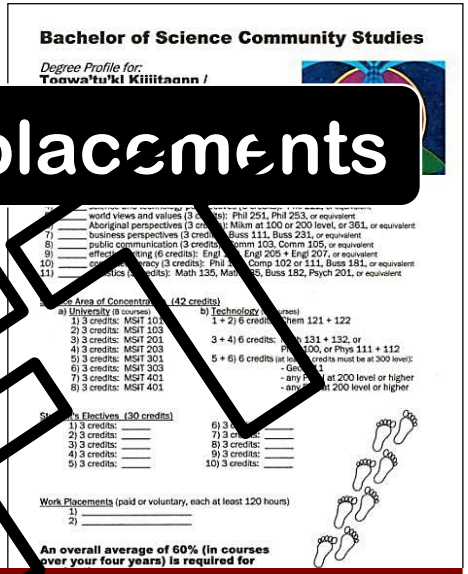
2) Learning Outcomes Framework SciC courses

Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #2:

- redevelop, including determination of new opportunities for work placements and new tracking mechanism for student-employer experiences
(no academic credits)


Bachelor of Science Community Studies

Degree Profile for:
Toqwa'tu'kl Kiiiitagnn /

work placements

DRAFT

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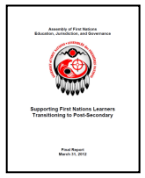

Supporting First Nations Learners Transitioning to Post-Secondary

Supporting First Nations Learners Transitioning to Post-Secondary

http://www.afn.ca/uploads/files/education2/postsecondarytransitionsreport.pdf

Integrative Science academic program

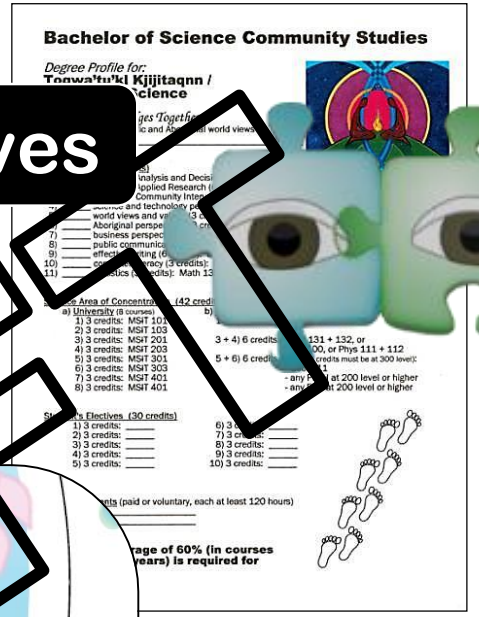
within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #3:

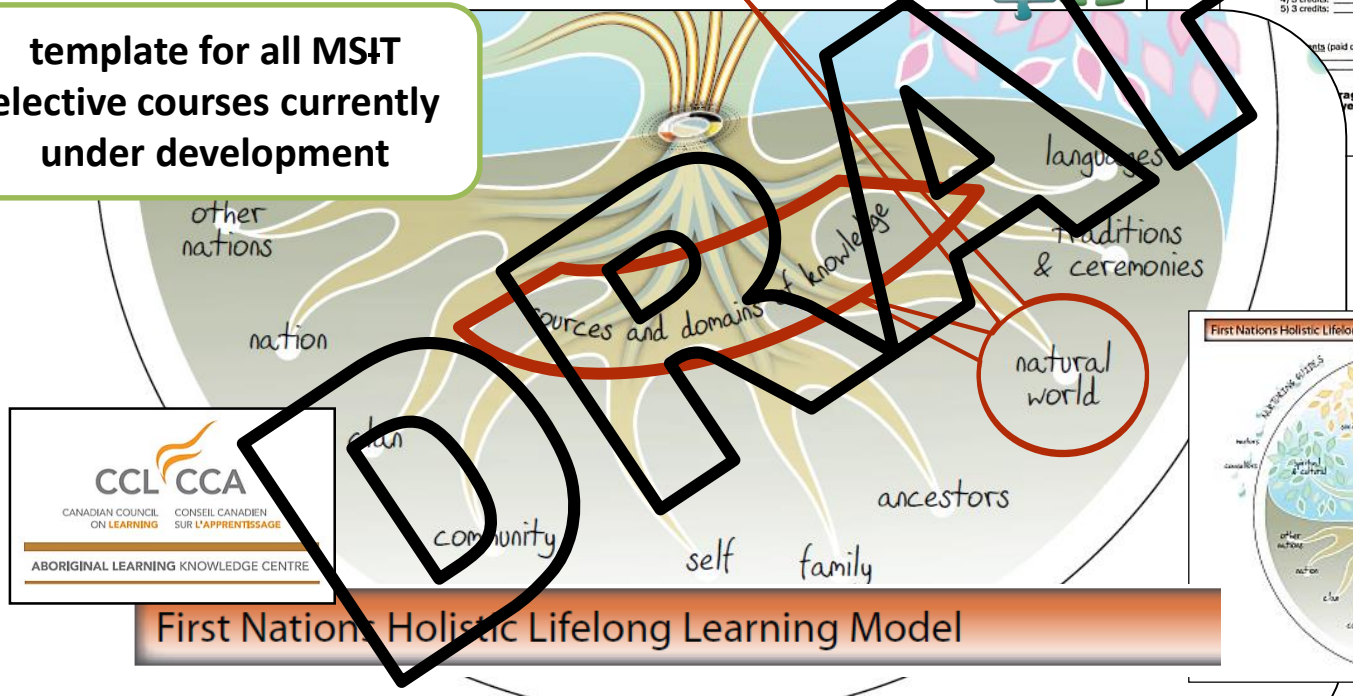
- revitalize and redevelop MSIT electives as one or more options (among others) for selection by student as personal or career interest (10 X 3 credits = 30 credits total)

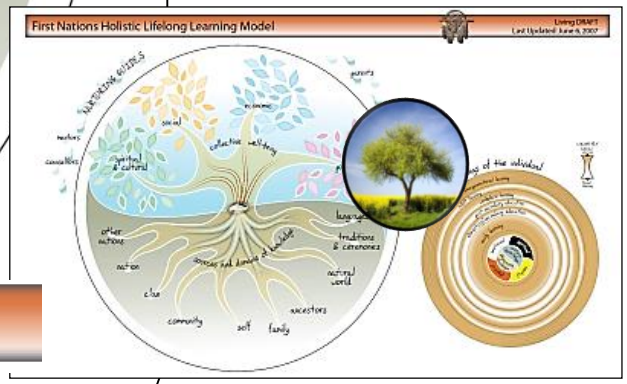
foci of all MSIT electives → natural world via

electives



template for all MSIT elective courses currently under development





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Integrative Science academic program

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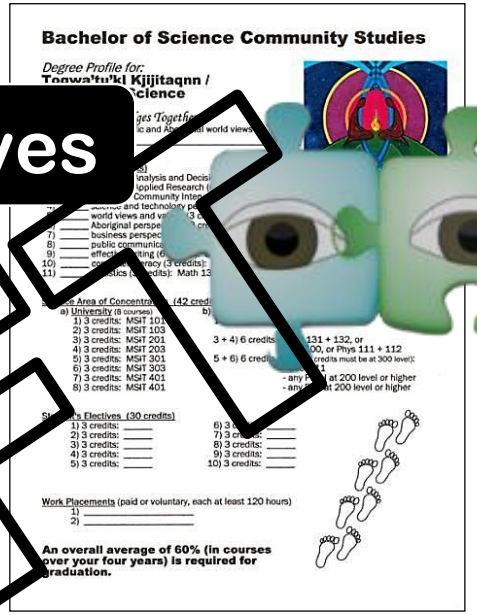

MSIT electives (LIST of original course numbers and names)

- MSIT 211 Ecosystems of Cape Breton* **MSIT 2505**
- MSIT 221 Waters, Soils, Minerals, and Climate
- MSIT 231 Animals of the Land
- MSIT 241 Animals of the Rivers, Lakes, and Sea**
- MSIT 251 Plants 1- Applied Botany*** **MSIT 2303**
- MSIT 351 Plants 2 **** **MSIT 3105** Plant Ecology

new number and/or name

* cross-listed as Biology 2505
** potential fisheries course re
*** cross-listed as Biol 2303
**** cross-listed with Biol 3541

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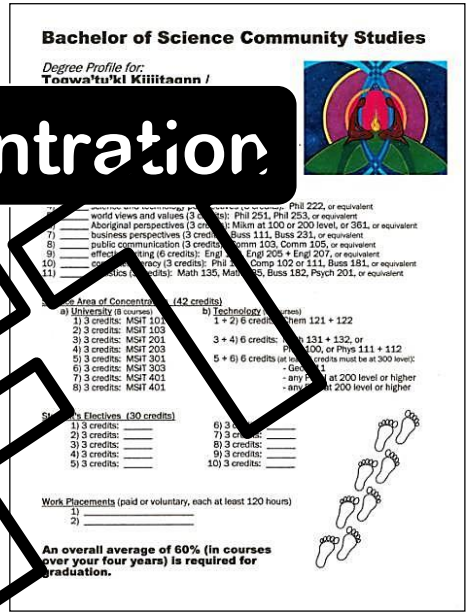
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #4:

- review and redevelop eligible pool of courses for science (beyond MSIT compulsory) and/or technology (6 X 3 credits = 18 credits total)

concentration


Bachelor of Science Community Studies

Degree Profile for:
Tooqwa'tu'kl Kiiiitagnn /

Phil 222, or equivalent
_____ world views and values (3 credits): Phil 251, Phil 253, or equivalent
_____ Aboriginal perspectives (3 credits): Mikm at 100 or 200 level, or 361, or equivalent
_____ business perspectives (3 credits): Buss 111, Buss 231, or equivalent
_____ public communication (3 credits): Comm 103, Comm 105, or equivalent
_____ effective writing (6 credits): Engl 1[illegible] Engl 205 + Engl 207, or equivalent
_____ [illegible]racy (3 credits): Phil [illegible] Comp 102 or 111, Buss 181, or equivalent
_____ [illegible]tics (3 credits): Math 135, Math [illegible]5, Buss 182, Psych 201, or equivalent

Area of Concentration (42 credits)
a) University (8 courses)
1) 3 credits: MSIT 101
2) 3 credits: MSIT 103
3) 3 credits: MSIT 201
4) 3 credits: MSIT 203
5) 3 credits: MSIT 301
6) 3 credits: MSIT 303
7) 3 credits: MSIT 401
8) 3 credits: MSIT 401

b) Technology (courses)
1 + 2) 6 credits: Chem 121 + 122
3 + 4) 6 credits: [illegible]n 131 + 132, or
Phys 100, or Phys 111 + 112
5 + 6) 6 credits (at le[illegible] credits must be at 300 level):
- Geo[illegible]
- any P[illegible] at 200 level or higher
- any [illegible]t 200 level or higher

[illegible]s Electives (30 credits)
1) 3 credits: _____
2) 3 credits: _____
3) 3 credits: _____
4) 3 credits: _____
5) 3 credits: _____
6) 3 [illegible]
7) 3 cr[illegible]
8) 3 credits: _____
9) 3 credits: _____
10) 3 credits: _____

Work Placements (paid or voluntary, each at least 120 hours)
1) _____
2) _____

An overall average of 60% (in courses over your four years) is required for graduation.

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current course pool

Cape Breton University
Academic Calendar 2013-2014

Technology 18 credits

- CHEM1104/1105
- 6 credits from MATH1107/1208, or PHYS1102
- 3 credits from GEOL 1103, PUBH2103, PUBH2105 OR
- 3 credits from PUBH3101, PUBH3103, PUBH4106, or PUBH4111.

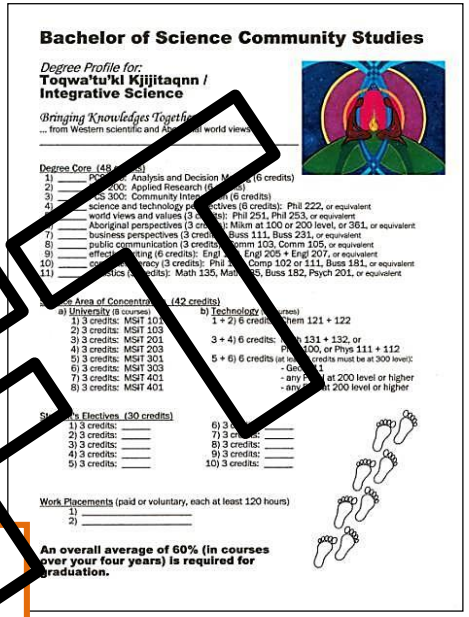
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #5:

core

- review and redevelop pool of courses for other (beyond SciC) skill and perspective topics in view of (a) current and future CBU course offerings AND (b) need to update thinking with respect to appropriate topics (10 X 3 credit courses = 30 credits total)



Bachelor of Science Community Studies

Degree Profile for:
Toqwa'tu'kl Kjijitaqnn / Integrative Science

Bringing Knowledges Together
... from Western scientific and Ab[illegible] world views

Degree Core (48 credits)
1) _____ [illegible] Analysis and Decision M[illegible] (6 credits)
2) _____ [illegible]200: Applied Research (6 credits)
3) _____ [illegible]S 300: Community Inte[illegible] (6 credits)
4) _____ science and technology pe[illegible]ctives (6 credits): Phil 222, or equivalent
5) _____ world views and values (3 c[illegible]ts): Phil 251, Phil 253, or equivalent
6) _____ Aboriginal perspectives (3 cr[illegible] in Mikm at 100 or 200 level, or 361, or equivalent
7) _____ business perspectives (3 credits): Buss 111, Buss 231, or equivalent
8) _____ public communication (3 credits): Comm 103, Comm 105, or equivalent
9) _____ effective writing (6 credits): Engl [illegible] Engl 205 + Engl 207, or equivalent
10) _____ computer literacy (3 credits): Phil [illegible] Comp 102 or 111, Buss 181, or equivalent
11) _____ statistics (3 credits): Math 135, Mat[illegible]5, Buss 182, Psych 201, or equivalent

Choice Area of Concentration (42 credits)
a) University (8 courses) b) Technology (8 courses)
1) 3 credits: MSIT 101 1 + 2) 6 credits: Chem 121 + 122
2) 3 credits: MSIT 103
3) 3 credits: MSIT 201 3 + 4) 6 credits: [illegible] 131 + 132, or
4) 3 credits: MSIT 203 [illegible]100, or Phys 111 + 112
5) 3 credits: MSIT 301 5 + 6) 6 credits (at le[illegible] credits must be at 300 level):
6) 3 credits: MSIT 303 - Geo[illegible]
7) 3 credits: MSIT 401 - any P[illegible] at 200 level or higher
8) 3 credits: MSIT 401 - any [illegible]t 200 level or higher

Science Electives (30 credits)
1) 3 credits: _____ 6) 3 credits: _____
2) 3 credits: _____ 7) 3 credits: _____
3) 3 credits: _____ 8) 3 credits: _____
4) 3 credits: _____ 9) 3 credits: _____
5) 3 credits: _____ 10) 3 credits: _____

Work Placements (paid or voluntary, each at least 120 hours)
1) _____
2) _____

An overall average of 60% (in courses over your four years) is required for graduation.

DRAFT

current course pool

Cape Breton University
Academic Calendar 2013-2014

1. Science and technology perspectives (6 credits)
   Recommended: PHIL2222 or equivalent
2. World views and values (3 credits)
   Recommended: PHIL1127 or equivalent
3. Aboriginal perspectives (3 credits)
   Recommended MIKM at 1000 or 2000 level or equivalent
4. Business perspectives (3 credits)
   Recommended: MGMT1601, MRKT1301 or equivalent
5. Public communication (3 credits)
   Recommended: COMM1103 or COMM1105
6. Effective writing (6 credits)
   Recommended: two of ENGL1101, 1103, 1105 or, ENGL1111 and 1113 or equivalent
7. Computer literacy (3 credits)
   Recommended: PHIL1163, COMP1163, MGSC2101 or equivalent
8. Statistics (3 credits)
   Recommended: MATH1109, MGSC1108, PSYC2101 or equivalent

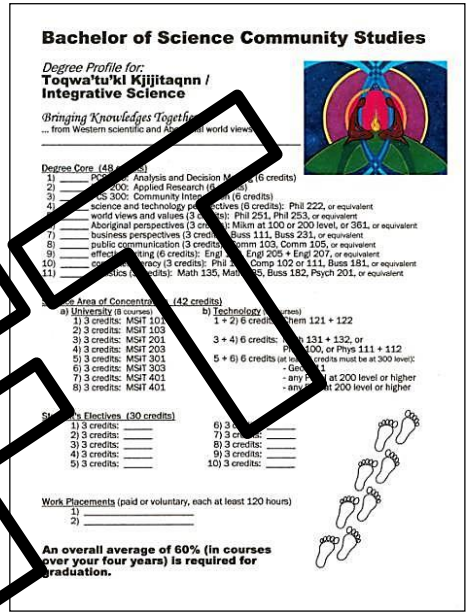
Integrative Science academic program

within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #5:

core

- review and redevelop pool of courses for other (beyond SciC) skill and perspective topics in view of (a) current and future CBU course offerings AND (b) need to update thinking with respect to appropriate topics (10 X 3 credit courses = 30 credits total)



Bachelor of Science Community Studies

Degree Profile for:
Toqwa'tu'kl Kjijitaqnn / Integrative Science

Bringing Knowledges Together
... from Western scientific and Ab... world views

Degree Core (48 ... ses)
1) _____ ... Analysis and Decision M... (6 credits)
2) _____ ...200: Applied Research (6 ...)
3) _____ ...S 300: Community Inte... (6 credits)
4) _____ ... science and technology p... ctives (6 credits): Phil 222, or equivalent
5) _____ ... world views and values (3 ...ts): Phil 251, Phil 253, or equivalent
6) _____ Aboriginal perspectives (3 cr... in Mikm at 100 or 200 level, or 361, or equivalent
7) _____ business perspectives (3 credits): Buss 111, Buss 231, or equivalent
8) _____ public communication (3 credits): Comm 103, Comm 105, or equivalent
9) _____ effect... writing (6 credits): Engl ... Engl 205 + Engl 207, or equivalent
10) _____ ... racy (3 credits): Phil ... Comp 102 or 111, Buss 181, or equivalent
11) _____ ...tics (... credits): Math 135, Mat... 5, Buss 182, Psych 201, or equivalent

...e Area of Concentrat... (42 credits)
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2) 3 credits: MSIT 103
3) 3 credits: MSIT 201
4) 3 credits: MSIT 203
5) 3 credits: MSIT 301
6) 3 credits: MSIT 303
7) 3 credits: MSIT 401
8) 3 credits: MSIT 401

b) Technology (... courses)
1 + 2) 6 credits: ...hem 121 + 122
3 + 4) 6 credits: ... 131 + 132, or
... 100, or Phys 111 + 112
5 + 6) 6 credits (at le... credits must be at 300 level):
- Geo... 1
- any P... at 200 level or higher
- any ... at 200 level or higher

S... Electives (30 credits)
1) 3 credits: _____
2) 3 credits: _____
3) 3 credits: _____
4) 3 credits: _____
5) 3 credits: _____
6) 3 ... _____
7) 3 cr... _____
8) 3 credits: _____
9) 3 credits: _____
10) 3 credits: _____

Work Placements (paid or voluntary, each at least 120 hours)
1) _____
2) _____

An overall average of 60% (in courses over your four years) is required for graduation.

example recent commentary re work expectations:

Guest Post: ... by Stephanie Warthe | February 22, 2012
http://www.e...p.ca/community/blog/3-skills-green-businesses-need-now/43183/

Several shifts are occurring in the skill and knowledge expectations for workers in the green economy. With the quick pace of technological advancements, the growth of the green economy has placed a heavier emphasis on technical competence, as green employees are required to work with increasingly complicated technological systems.

According to ECO Canada's recent environmental study titled **Defining the Green Economy**, businesses have identified 3 green skill gaps that are needed in the environment industry:

ECO CANADA
Environmental Careers Organization

http://www.eco.ca/community/blog/3-skills-green-businesses-need-now/43183/

by Stephanie Warthe | February 22, 2012

Guest Post: by Rhea Castillo

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According to ECO Canada's recent environmental study titled **Defining the Green Economy**, businesses have identified 3 green skill gaps that are needed in the environment industry:

1

Technological Change

The lightening-speed evolution of technology requires people who can:

1) **Adapt** to new methods
2) **Apply** new methods to existing practices
3) **Understand** the relevance of certain technologies

ECO CANADA
Environmental Careers Organization

http://www.eco.ca/community/blog/3-skills-green-businesses-need-now/43183/

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Guest Post: by Rhea Castillo

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According to ECO Canada's recent environmental study titled **Defining the Green Economy**, businesses have identified 3 green skill gaps that are needed in the environment industry:

2

Knowledge of Sustainable Development

Knowledge of sustainable development and green practices is important. The lack of people with this background is blaringly apparent across all levels of business, and as such, may require further environmental training or education. Green businesses need people who think green and can lead a workforce's adoption of green practices. Carbon trading and environmental finance are areas businesses are particularly in the dark about.

ECO CANADA
Environmental Careers Organization

http://www.eco.ca/community/blog/3-skills-green-businesses-need-now/43183/

by Stephanie Warthe | February 22, 2012

Guest Post: by Rhea Castillo

Several shifts are occurring in the skill and knowledge expectations for workers in the green economy. With the quick pace of technological advancements, the growth of the green economy has placed a heavier emphasis on technical competence, as green employees are required to work with increasingly complicated technological systems.

According to ECO Canada's recent environmental study titled **Defining the Green Economy**, businesses have identified 3 green skill gaps that are needed in the environment industry:

3

Interdisciplinary Thinkers ↔ note ≈ transdisciplinary

Big-picture thinkers who thoroughly grasp green issues and their importance across disciplines or departments are, and will continue to be, key players in the green economy.

As emphasized in **Defining the Green Economy**, "As the green economy continues to evolve, greater pressures will be placed on interdisciplinary cooperation, including a greater level of understanding of the relationships between business areas interacting with each other".

Integrative Science academic program

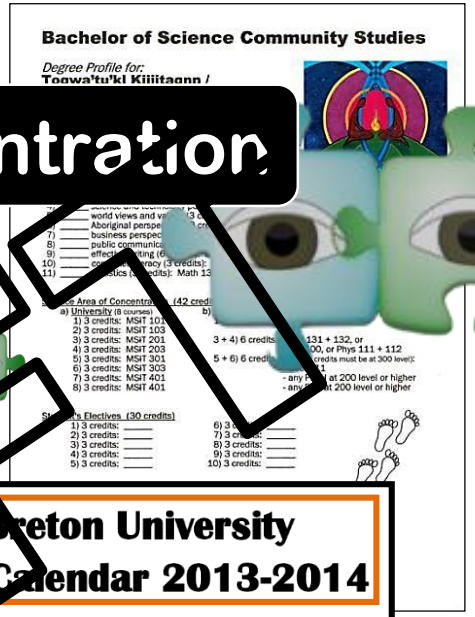
within 4 year degree Bachelor of Science Community Studies

DEGREE WORK NEED #6:

- **review and revitalize MSIT compulsory courses as pattern-based science courses, including positioning in program 1st - 4th year**

foci of all MSIT courses → Integrative Science via

concentration



Concentration

Science - 24 credits

- MSIT1101/1103 Sense of Place, Emergence & Participation
- MSIT2101/2103 Ways of Knowing
- MSIT3101/3103 Cycles & Holism
- MSIT4101/4103 Wholeness

Cape Breton University
Academic Calendar 2013-2014

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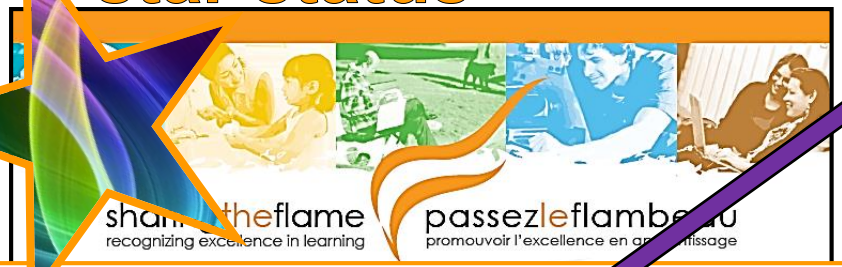
template for all MSIT compulsory courses to be developed

Additional consideration needs to be given to the appropriate "year level" for MSIT 1101/1103 and MSIT 2101/2103, which were originally intended to provide a "science foundation" for first year students.

"star status"



Aboriginal Learning 4

Master of Education: Leadership in Learning (Nunavut) 5
Mi'kmaq Studies / Integrative Science Program 6
The Native Language Instructors' Program (NLIP) 7
Uniting Our Nations: Relationship-based Programming for First Nations and Métis Youth 8

Celebrating Effective Learning Practices

2008 Program Descriptions

CANADIAN COUNCIL ON LEARNING CCL CCA CONSEIL CANADIEN SUR L'APPRENTISSAGE
1410–50 O'Connor, Ottawa ON Canada K1P 6L2 | T: 613.782.[illegible]59 | F: 613.782.2956
www.ccl-cca.ca

CCL CCA
CANADIAN COUNCIL ON LEARNING CONSEIL CANADIEN SUR L'APPRENTISSAGE
ABORIGINAL LEARNING KNOWLEDGE CENTRE

Mi'kmaq Studies/ Integrative Science Program

Overview

The vision of the *Toqwa'tu'kl Kjijitaqnn*/ Integrative Science Program is to bring together modern Western sciences and the Mi'kmaw conceptual world view. Given the label "MSIT" (a Mi'kmaq word meaning everything together), these courses taught at Cape Breton University emphasize relationships within nature, and acknowledge the profound knowledge of such relationships as they are reflected in Mi'kmaq language and legends. Course content is approximately 80–85% Western/mainstream

Innovation

Integrative science courses include:

- Sense of Place, Emergence and Participation: the exploration of human consciousness including its brain-basis as understood in modern neuro and cognitive science as well as the traditional world views of Aboriginal people
- Ways of Knowing: the exploration of ways of knowing about and living within nature, including Traditional Ecological Knowledge (TEK) and modern ecosystem stewardship
- Cycles and Holism: human understandings of cycles, rhythms and transformations in nature, including western science and Aboriginal conceptual world views
- Wholeness: human understandings of wholeness and change in nature by exploring the topics of health, disease and

Objectives

- address the low participation rate by Mi'kmaq students in the post-secondary sciences and science-related programs
- address the lack of acknowledgement by

extracts above and below from CCL document

Integrative Science conferred national award of recognition by CCL in 2008

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http://www.ccl-cca.ca/pdfs/SharingFlame/SharingTheFlame2009_EN_11dec.pdf

Additional work required to revitalize the Integrative Science academic program.

- **positioning for MSIT and SciC courses**
- **purposes for MSIT and SciC courses**
- **various formats and ways for delivery**

Can Integrative Science regain “star status”?

four year degree program: standard structure & time

background info

4 Years

4
3
2
1

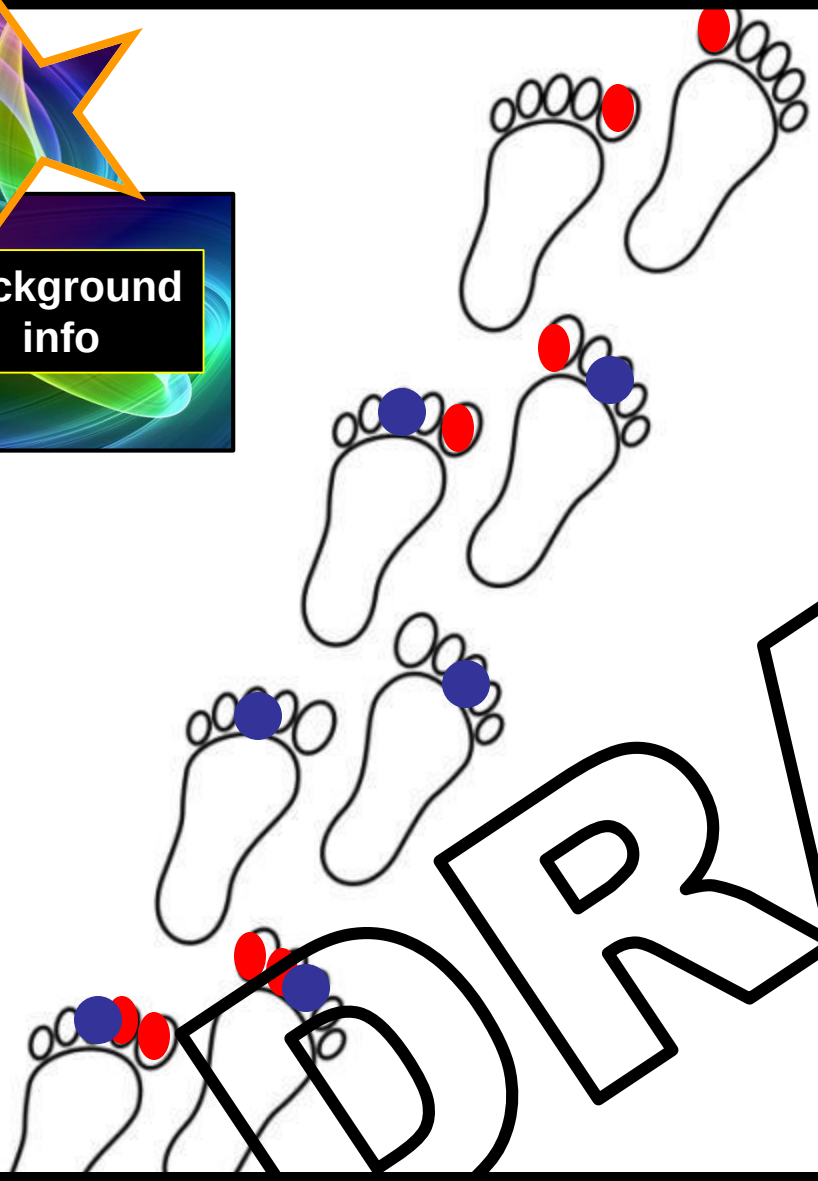
Fall term
Winter term

Each term
= 5 courses
(each course = 3 credits)

Christmas break

four year degree program: standard structure & time

background info



PCS/ COMS courses

MSIT compulsory courses

ORIGINAL positioning, by year, for courses serving as “key toes” when 4 year Integrative Science academic program was conceived (1997)

four year degree program: standard structure & time

4

3

2

1

need to consider:
what prerequisites for those beyond 1st year?

where ?
a pair in each year of 4 year BScCS degree

MSIT compulsory courses

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NEW positioning, by year, for compulsory MSITs as "key toes" in revitalized four year Integrative Science academic program

four year degree program: stand

4

3

2

1

where ?

see documents:
1) New SciC courses
2) Learning Outcomes Framework SciC courses

SciC courses

rebuild BScCS core to meet original vision, namely "science"

according to student's needs but, for BScCS:
6 required in total;
maximum of two at each year level;
and
at least one required in each of year levels 3 and 4

NEW positioning, by year, for compulsory SciC courses as "key toes" in revitalized four year Integrative Science academic program

question of purpose

MANY POSSIBILITIES

BScCS - Integrative Science
BScCS - other
BSc Biology
BSc Nursing
BA (in-community delivery)
all other CBU degrees
degrees of other universities
MSAP (Mi'kmaq Science Advantage Program)
Aboriginal Health Sciences Pathways

ScIC courses

MSIT courses

question of how

VARIOUS DELIVERY FORMAT POSSIBILITIES

on campus (regular)
in community
online
connected learning (other)
MOOCs

SciC courses

MSIT courses

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INTEGRATIVE SCIENCE

= bringing together Indigenous and Western scientific knowledges and ways of knowing (as knowledge systems)

TWO-EYED SEEING

= learning to see with the strengths in both Indigenous and Western knowledges and ways ... and use them together