**Sustainability-Across-the-Curriculum Audit: Updated Results 2014**

**Background**

Ontario’s Ministry of Training, Colleges and Universities, together with industry, has emphasized the need for graduates to have social, environmental and economic sustainability skills and knowledge (Knibb, 2012; OECD, 2011). George Brown College has a strategic focus on ensuring its graduates understand how sustainability relates to their work and to society. These combined requirements were key drivers of our inaugural Sustainability-Across-the-Curriculum Audit in 2013.

The goal of the audit was to render visible all courses that deliver and measure student acquisition of sustainability skills and knowledge within all active programs of instruction (cf. Rusinko, 2010; Bridges, 2008; Jahan & Mehta, 2007). 2013 audit results provided useful preliminary data about the level of integration of social, environmental and economic sustainability themes in our programs.

In May 2014, the Green Team completed a **large-scale update** of its first Sustainability-Across-the-Curriculum audit. New results show improved detail and granularity, as significantly more course outlines were available for audit. We now know which programs already provide a framework for learning that emphasizes environmental, social and/or economic sustainability skills and knowledge, particularly as these relate to a student’s own field of study. We know precisely in which courses this learning takes place, based on course learning outcomes, and we know how much of each type of sustainability learning (environmental, social, economic) is taking place within each course, program and Centre.

The updated 2014 results show that fully 85%—**128 of 150 programs**—already contain at least one course with a learning outcome relating to social, environmental and/or economic sustainability. As a result of our Sustainability-Across-the-Curriculum Audit we are better able to link our sustainable research mandate to broader industry productivity and graduate preparation (cf. United Nations Development Program, 2014; Sibbel, 2009; Tilbury, 2004).

**Methods**

1. Develop framework to capture data on the integration of sustainability themes within program outcomes and course learning outcomes.
2. Define terms and concepts.
3. Identify key words, phrases and topics associated with general and discipline-oriented social, environmental and economic sustainability.
4. Search for and score the presence or absence (1/0) of sustainability themes within program- and course-level learning outcomes.

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1 The Sustainability-Across-the-Curriculum Audit grew out of earlier Green Team research (2012) into where within the College curriculum sustainability teaching and learning would have the greatest and most measurable impact. Our conclusion was that in an outcomes-based learning environment, sustainability skills and knowledge would have the greatest effect when integrated within course learning outcomes. Integration of sustainability themes within learning outcomes allows the College to do two key things:
   - provide valuable sustainability skills and knowledge to George Brown graduates
   - quantify sustainability-related teaching and learning across programs
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Where sustainability themes were found, the audit also captured the type (environmental, social and/or economic sustainability). As well, in accordance with a key requirement of the Sustainability Tracking Assessment and Ratings System (STARS), the audit distinguished between sustainability-focused (course contains three or more learning outcomes relating to sustainability) and sustainability-related courses (1-2 sustainability learning outcomes). Notably, the data from the audit satisfied the entire curriculum component of STARS, which the College has been using since early 2014 to measure overall College sustainability practices.

Results

85% of active programs already contain at least one course with a learning outcome relating to social, environmental and/or economic sustainability. Results were broken down across seven academic Centres:

- Centre for Business
- Centre for Arts & Design
- Centre for Construction & Engineering Technologies
- Centre for Hospitality and Culinary Arts
- Centre for Health Sciences
- Centre for Community Services and Early Childhood
- Centre for Preparatory and Liberal Arts

Percentage scores were derived based on number of active programs/courses published on each Centre’s webpage, number of program standards and course outlines and available for audit, and number of program standards and course outlines found to contain sustainability-related learning outcomes. The audit confirmed that sustainability teaching and learning at the outcome level is already occurring across all College Centres. Centre results are shown below. Appendix A contains graphed results; Appendix B depicts key sustainability topics by frequency; Appendix C contains the College-approved definitions of environmental, social and economic sustainability that informed our audit criteria.

**Centre for Business**

- Percentage of program standards audited: 92% (24 of 26)
- Percentage of course outlines audited: 100% (230 of 230)
- Percentage of programs with 1 or more sustainability-related program outcome: 81% (21 of 26)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 100% (26 of 26)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 32% (73 of 230) of which 11 courses met the criteria for sustainability-focused; 62 courses were sustainability-related

**Sustainability type frequency**: 63% social, 31% economic, 6% environmental

**Key sustainability subject areas in CB**: ethics, codes of conduct, human rights legislation, fair labour practices, microfinance, international/intercultural awareness.
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**Centre for Arts & Design**
- Percentage of program standards audited: 75% (15 of 20)
- Percentage of course outlines audited: 99% (342 of 345)
- Percentage of programs with 1 or more sustainability-related program outcome: 10% (2 of 20)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 65% (13 of 20)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 10% (35 of 342) of which 3 courses met the criteria for sustainability-focused; 32 courses were sustainability-related

**Sustainability type frequency:** 56% social, 22% economic, 22% environmental

**Key sustainability subject areas in CAD:** community health and wellness, sustainable design, international/intercultural awareness, materials handling & disposal.

**Centre for Construction & Engineering Technologies**
- Percentage of program standards audited: 96% (24 of 25)
- Percentage of course outlines audited: 91% (368 of 403)
- Percentage of programs with 1 or more sustainability-related program outcome: 56% (14 of 25)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 92% (23 of 25)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 19.5% (72 of 368) of which 8 courses met the criteria for sustainability-focused; 64 courses were sustainability-related

**Sustainability type frequency:** 56% social, 3% economic, 41% environmental

**Key sustainability subject areas in CCET:** safety protocol, codes of conduct, materials handling & disposal, identification and selection of sustainable materials, LEED.

**Centre for Hospitality and Culinary Arts**
- Percentage of program standards audited: 63% (12 of 19)
- Percentage of course outlines audited: 94% (238 of 252)
- Percentage of programs with 1 or more sustainability-related program outcome: 37% (7 of 19)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 84% (16 of 19)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 19.76% (54 of 238) of which 5 courses met the criteria for sustainability-focused; 49 courses were sustainability-related

**Sustainability type frequency:** 75% social, 11% economic, 14% environmental

**Key sustainability subject areas in CHCA:** Safety, hygiene, materials handling & disposal, identification and selection of sustainable products, fair labour practices, intercultural awareness.
**Centre for Health Sciences**

- Percentage of program standards audited: 85% (22 of 26)
- Percentage of course outlines audited: 82% (349 of 426)
- Percentage of programs with 1 or more sustainability-related program outcome: 58% (15 of 26)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 77% (20 of 26)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 39% (136 of 349) of which 23 courses met the criteria for sustainability-focused; 113 courses were sustainability-related

**Sustainability type frequency:** 94% social, 4% economic, 2% environmental

**Key sustainability subject areas in CHS:** patient safety, community health, hygiene, ethics, materials handling & disposal, codes of conduct, intercultural awareness.

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**Centre for Community Services and Early Childhood**

- Percentage of program standards audited: 90% (19 of 21)
- Percentage of course outlines audited: 87% (297 of 342)
- Percentage of programs with 1 or more sustainability-related program outcome: 81% (17 of 21)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 100% (21 of 21)
- Percentage of courses with 1 or more sustainability-related learning outcomes: of which 65 courses met the criteria for sustainability-focused; 126 courses were sustainability-related

**Sustainability type frequency:** 90% social, 9% economic, 1% environmental

**Key sustainability subject areas in CSEC:** ethics, equity, diversity, social justice, codes of conduct, human rights legislation, fair labour practices, international/intercultural awareness, community health and wellness.

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**Centre for Preparatory & Liberal Studies**

- Percentage of program standards audited: 77% (10 of 13)
- Percentage of course outlines audited: 63% (100 of 158)
- Percentage of programs with 1 or more sustainability-related program outcome: 69% (9 of 13)
- Percentage of programs with 1 or more courses containing sustainability outcomes: 77% (10 of 13)
- Percentage of courses with 1 or more sustainability-related learning outcomes: 60% (60 of 100) of which 28 courses met the criteria for sustainability-focused; 32 courses were sustainability-related

**Sustainability type frequency:** 85% social, 10% economic, 5% environmental

**Key sustainability subject areas in CPLS:** human rights, equity, diversity, ethics, fair labour practices, biological systems, conservation, ecosystems, intercultural awareness.
Conclusions & Next Steps

George Brown’s goal is to ensure its graduates understand how sustainability relates to their discipline and their communities. Our commitment, as outlined by President Anne Sado in her March 27, 2014 Earth Hour message, is that “every program will contain at least one learning outcome that addresses sustainability”. This responds to the needs of students, industry and Ontario's Ministry of Training, Colleges and Universities, which has placed increasing importance on students graduating with sustainability skills and knowledge.

A majority of programs (128 of 150, 85%) already meet or exceed the College commitment. For those that do not, the effort will be modest: just one sustainability-related outcome can be articulated in a single course to meet the College's commitment. Support from a curriculum specialist is available. Table 1 indicates number of programs in each Centre that do / do not currently contain at least one course with at least one sustainability-related learning outcome.

The Sustainability-Across-the-Curriculum Audit has made George Brown a system leader in the objective confirmation of integration of measurable sustainability themes within core curriculum. It has allowed us to quantify how many programs already meet the College commitment to ensure that that every program will contain at least one learning outcome that addresses sustainability, and how many as yet do not. This baseline information allows us to set clear, rational and evidence-based targets for increase.

<table>
<thead>
<tr>
<th>Centre</th>
<th>Total # of Programs</th>
<th># of Programs that Already Contain Course/s with Sustainability Learning Outcomes</th>
<th># of Programs that Do Not Contain Course/s with Sustainability Learning Outcomes</th>
<th>Programs with No Sustainability Learning Outcomes</th>
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<td>Centre for Construction &amp;</td>
<td>25</td>
<td>23</td>
<td>2</td>
<td>T167/45613 Electrical Techniques</td>
</tr>
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</table>
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| Centre for Engineering Technologies | | | • T165/41010 Plumbing Techniques |
| Centre for Hospitality & Culinary Arts | 19 | 16 | 3 | • H606 Baker Apprenticeship - Adv |
| | | | • H604 Patissier Apprenticeship |
| | | | • H404 Advanced Wines & Beverage Management (Postgraduate) |
| Centre for Health Sciences | 26 | 20 | 6 | • S102/51625 Orthotic/Prosthetic Technician |
| | | | • S415/7176 Family Practice Nursing (Postgraduate) |
| | | | • S416/7177 Interprofessional Acute Care Paediatric Cardiology |
| | | | • S122 R.P.N. Bridge to B.Sc.N. (Postgraduate) |
| | | | • S422/71423 RN - Critical Care Nursing (Online Postgraduate) |
| | | | • S402/71423 RN - Critical Care Nursing (Postgraduate) |
| Centre for Community Services & Early Childhood | 21 | 21 | 0 | |
| Centre for Preparatory & Liberal Studies | 13 | 9 | 4 | • A737 Academic Upgrading |
| | | | • A738 Literacy/Basic for Deaf & Hard of Hearing |
| | | | • A102/41601 Pre-Health |
| | | | • A106/47610 Construction Craft Worker |
| Total | 150 | 128 | 22 | |

The College has recently integrated a review of sustainability outcomes as a criterion of course outline analysis during program review. We should also considering assigning permanent responsibility to keep this audit up-to-date.

Each Centre will receive summary spreadsheets showing precisely which programs, courses and individual program- and course-level outcomes were found to contain sustainability themes. Green Team personnel will be pleased to meet with program teams to explain all results.
Acknowledgements

The Green Team enthusiastically thanks the following individuals for their support of and contributions to this project.

Jillian Butler, Communication Coordinator, Office of Research and Innovation
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Dawn Davidson, Director, Office of Research and Innovation
Suzanne Dwyer, Sr. Manager, Applied and Institutional Research
Laura Jo Gunter, Sr. Vice President Academic
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Gary Kapelus, Chair, Academic Services and Student Affairs
Jason Ngan, Cooperative Education Student, Business Administration (HR) program
Brenda Pipitone, Dean, Academic Services and Student Affairs
Nancy Sherman, Dean, Centre for Construction & Engineering Technologies and Green Team co-chair
Helene Vukovich, Associate Dean, Centre for Business
Appendix A: Graphed Results

**Percentage of Program Standards Available to Audit**

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<thead>
<tr>
<th>Program</th>
<th>Percentage</th>
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**Program Standards Available to Audit**

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<tr>
<td>Business</td>
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<tr>
<td>TOTAL</td>
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</table>
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Percentage of Courses Available to Audit

Courses Available to Audit
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Percentage by Center: Programs with 1 or more Program Outcome addressing sustainability

- Preparatory and Liberal Studies: 25%
- Arts and Design: 16%
- Community Services and Early Childhood: 18%
- Health Sciences: 20%
- Hospitality and Culinary Arts: 11%
- Construction and Engineering Technologies: 2%

Program Standards with 1 or more VLO addressing sustainability

- Preparatory and Liberal Studies: 9 (Program Standard) 13 (Total Programs)
- Arts and Design: 2 (Program Standard) 20 (Total Programs)
- Community Services and Early Childhood: 17 (Program Standard) 21 (Total Programs)
- Health Sciences: 15 (Program Standard) 26 (Total Programs)
- Hospitality and Culinary Arts: 7 (Program Standard) 19 (Total Programs)
- Construction and Engineering Technologies: 14 (Program Standard) 25 (Total Programs)
- Business: 21 (Program Standard) 26 (Total Programs)
Percentage by Centre: Programs with 1 or more *Courses* Addressing Sustainability

- Preparatory and Liberal Studies: 10%
- Arts and Design: 16%
- Community Services and Early Childhood: 16%
- Health Sciences: 16%
- Hospitality and Culinary Arts: 18%
- Construction and Engineering Technologies: 20%
- Preparatory and Liberal Studies: 7%

Programs with 1 or more *Courses* Addressing Sustainability

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<th>Total Programs</th>
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<td>Construction and Engineering Technologies</td>
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<tr>
<td>Preparatory and Liberal Studies</td>
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</tbody>
</table>
STARS classification: Sustainability Focused or Sustainability Related

Preparatory and Liberal Studies: 28 Sustainability Focused, 32 Sustainability Related
Arts and Design: 3 Sustainability Focused, 32 Sustainability Related
Community Services and Early Childhood: 65 Sustainability Focused, 126 Sustainability Related
Health Sciences: 23 Sustainability Focused, 113 Sustainability Related
Hospitality and Culinary Arts: 5 Sustainability Focused, 49 Sustainability Related
Construction and Engineering Technologies: 8 Sustainability Focused, 64 Sustainability Related
Business: 11 Sustainability Focused, 62 Sustainability Related

Sustainability Focused
Sustainability Related
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Sustainability Learning Outcomes: Type Frequency by Centre

Sustainability Learning Outcomes: Type Frequency by Centre

Preparatory and Liberal Studies
Arts and Design
Community Services and Early Childhood
Health Sciences
Hospitality and Culinary Arts
Construction and Engineering Technologies
Business

Environmental Economic Social

Preparatory and Liberal Studies Arts and Design Community Services and Early Childhood Health Sciences Hospitality and Culinary Arts Construction and Engineering Technologies Business

Environmental Economic Social

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### Business Sustainability Type Frequency

- Environmental: 6%
- Economic: 31%
- Social: 63%

### Arts and Design Sustainability Type Frequency

- Environmental: 56%
- Economic: 22%
- Social: 22%

### Construction and Engineering Technologies Sustainability Type Frequency

- Environmental: 56%
- Economic: 3%
- Social: 41%
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Hospitality and Culinary Arts Sustainability Type Frequency

- Environmental: 14%
- Economic: 11%
- Social: 75%

Health Sciences Sustainability Type Frequency

- Environmental: 2%
- Economic: 4%
- Social: 94%

Community Services and Early Childhood Sustainability Type Frequency

- Environmental: 1%
- Economic: 9%
- Social: 90%
Preparatory and Liberal Studies ST Frequency

- Environmental: 86%
- Economic: 4%
- Social: 10%

Overall College Sustainability Type Frequency

- Environmental: 8%
- Economic: 11%
- Social: 81%
APPENDIX B: Key Sustainability Subject Areas (by frequency)
APPENDIX C: Definitions of Sustainability

Environmental Sustainability
Environmental sustainability is concerned with reducing human consumption of resources and mitigating human impact on the natural environment. A sustainable approach to the physical environment entails improved understanding of the interrelation of ecosystems and the life-giving services they provide. It promotes behaviours that minimize harm to air and water quality, and that reduce greenhouse gas emissions.

Social Sustainability
Sustainable social practices promote “social justice, conflict resolution, access, human well-being, social equity, diversity, intercultural fluency, quality of life, global citizenship, [and] community building” (University of British Columbia, no date).

Economic Sustainability
Healthy local and national economies are fundamental elements of liveable, equitable and prosperous communities. The Canadian International Development Agency’s Sustainable Economic Growth Strategy prioritizes economic practices that:

- “Foster a stable foundation for viable businesses and industries to thrive
- Increase opportunities for meaningful employment, particularly in the formal economy
- Maximize the contribution of growth to the public resources available for investment in the welfare of the population"

Sustainable, ethical economic practices “[…] integrate environmental sustainability, equality between women and men, and governance as essential considerations to achieve sustainable economic growth” (CIDA 2011).
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References


United Nations General Assembly. (No date). 64th Session, Agenda Item 53A: Resolution adopted by the General Assembly 64/236. Implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the