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# Building Transformative Leaders in STEM Education

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# **Building Transformative Leaders in STEM Education**

Laurie Huffman, Karynne Kleine, Julia Metzker





## The Innovative Course-Building Group (IC-BG)

- is a **grass-roots social network**
- supports faculty and staff **across disciplines**
- uses **civic issues** as a catalyst for designing engaging courses
- focuses on important **student learning**.



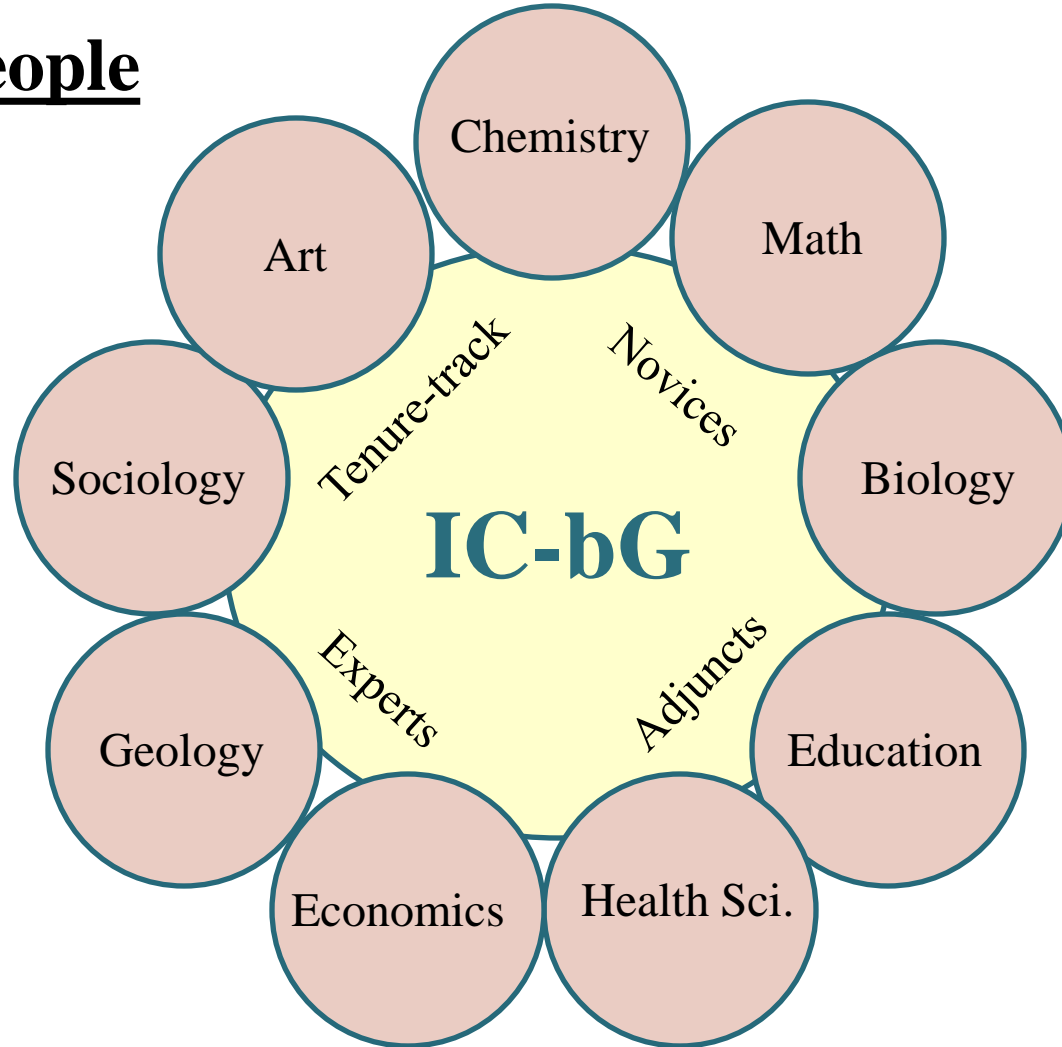
## Our guiding principles

- **Time is valuable:** gatherings are deliberately designed to be productive, meaningful, and enjoyable uses of this limited resource.
- Good ideas recycled, refined, and adapted become **great ideas**.
- Collaboration supports **innovation**.

# Innovative Course-Building Group

learning education SALG activities transformative syllabi  
courses humanities outcomes social sciences cross-disciplinary science course-building  
innovative staff assessment meaningful collaborative social network teaching  
arts students support grass-roots science goals resources  
civic faculty assessment arts science

## Our people





## Portrait of an IC-bGer

### Gregg Kaufman – Government Instructor

- Gregg had been teaching part-time when he joined the IC-bG last year. Currently, he is teaching  $\frac{3}{4}$  time and coordinates the American Democracy Project.
- As an instructor (non-tenure track) many development activities were unavailable to him.
- Through IC-bG workshops, Gregg designed Public Deliberation, a core curriculum course for first-year students that addresses critical thinking. His course design began with specific course learning outcomes and ended with a course-map that links the assessment and activities to course goals.
- As a new member of the IC-bG mentor group, Gregg will participate in future workshop development, mentoring and SOTL activities.
- Leading CETL sponsored Engaged Learning Workshop on Public Deliberation Methods.

## Portrait of an IC-bGer

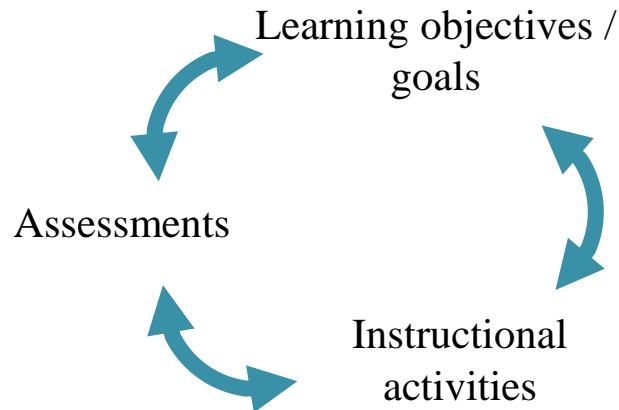
### Laurie Huffman – Mathematics Professor

- Laurie is a tenured math professor, who teaches a range of service and major courses (20% upper-level, 80% lower-level).
- She held many *service* leadership roles prior to joining the IC-bG.
- While she participated in the IC-bG Backward Design Workshop series (2010-2011), she began to explore incorporating active learning and group work into a traditional course structure.
- After the workshops, she sought several *teaching* leadership roles – including:
  - (1) initiating goal writing in her own department
  - (2) co-facilitating a university-wide curriculum mapping workshop
  - (1) a complete redesign of her statistics courses
  - (2) Mathematics Curriculum Building Workshop
- ...and she is taking the lead in organizing the IC-bG summer institute.

# Using Backward Course Design to Reinvigorate STEM

Dr. Kimberly Cossey, Dr. Angel Abney,  
Dr. Chavonda Mills, Dr. Caralyn  
Zehnder,

**11:00am-11:45am**  
**Nessmith-Lane Room 2911**



## Ideas

What is the "big picture" or lofty idea?



## Goals

What do you want the student to be able to do?



## Activities

Debates, reports, experiments, posters, presentations, interviews, exams, essays.



## Assessment

- Did students achieve the learning goals?
- Include formative & summative assessment.







We would like to thank the Dean of Arts and Sciences and the STEM Initiative at Georgia College for support of the development and dissemination of the work of the IC-bG.



**What do you want to accomplish?**

**What do you need on your campus to get started?**

## Portrait of an IC-bGer

### Sandra Godwin – Sociology Professor

- Sandra was a tenured professor in sociology (teaching a range of lower and higher level courses) interested in making her courses more engaging.
- Sandra was keenly interested in team teaching but wasn't sure how to design a course or accomplish a team-teaching workload.
- Sandra was approached by an IC-bG mentor (in chemistry) to design an interdisciplinary course entitled “Animal, Vegetable, Human: The Science and Sociology of Your Food”
- After completing the Backward Design Workshop series, Sandra has gone on to design and teach courses with faculty in other disciplines.
- As a veteran member of the ICbG mentor group, Sandra has participated in workshop development, mentoring and SOTL activities.