Way of Thinking - Abstract Structures Course Proposal

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**Abstract Structures**

This Way of Thinking focuses on formal and symbolic representations of objects, structures and/or experiences. Through this focus, this Way of Thinking examines such representations and the relationships between them and explores ways that formal and symbolic models can be applied to a range of more concrete examples and situations. Abstract reasoning by its nature requires unambiguous, systematic, and/or well-defined rules for the creation and manipulations of symbols and relationships.

Students will focus on developing representations (numeric, symbolic, graphical, and otherwise) and rules. These courses will refine students’ manipulation and understanding of those representations and rules appropriate to the subject being studied. As Abstract Structures model objects, structures and relationships, a course would be expected to cultivate students’ abilities to move fluently between these abstract representations/models and the concrete examples (and/or simpler abstractions) they represent. Examples of Abstract Structures include but are not limited to: music theory; symbolization and evaluation of the validity of arguments; analysis and composition of algorithms and computer programs; analysis and development of mathematical models; linguistic analysis; deductive arguments and formal proofs.

In the Integrations Curriculum a course can be designated as either:

1. A Way of Thinking, OR
2. CSD: Identity (CI) or CSD: Systems (CS), OR
3. Learning Foundations, Learning Explorations, or Learning Integrations, OR
4. Theological Explorations (THEO 1) or Theological Integrations (THEO 2)

Thematic Encounters or Thematic Focus\* designations must be attached to a course with a Way of Thinking designation.

Any course carrying one of the above designations may also have one engagement^, except for Theological Explorations (THEO 1), CSD: Identity, Learning Foundations, Learning Explorations, and Learning Integrations, which cannot carry engagements:

1. Artistic engagement (ARTE)
2. Experiential engagement (EXP)
3. Global engagement (GLO)

* Any course may satisfy the Quantitative Reasoning skill requirement.
* Any course (except courses that fulfill Theological Explorations, Theological Integrations, Learning Foundations, or any course with THEO course number) may also satisfy the Benedictine Raven.

\*Thematic Focus courses will be renumbered based on theme and course level to be consistent across the curriculum. They will still carry the Department prefix.

The renumbering will be as follows:

277/377 - Justice Theme  
278/378 - Movement Theme  
279/379 - Truth Theme

Each course under the Theme will have a different letter, for example:

HIST 276A  
HIST 276B, etc.

^Semester-length study abroad courses may carry both GLO and EXP.

A Way of Thinking course may only carry one Way of Thinking per instructor; team taught courses may have two distinct Ways of Thinking.

Will your course be team-taught?

  Yes   No

If yes, then please list instructor and list second Way of Thinking (the proposal for the second Way of Thinking must be submitted at the same time):

Instructor

Course number:

Course title (as listed in the official catalog). If a topics course, please list the specific title this request applies to:

Abbreviated course title for the class schedule (30 characters or less including parenthesis & designation)

Prerequisites (if any):

MOST RECENT Official course description from the Academic Catalog. If this is a topics course, please list description for this specific topic:

Please note:

A.  The committee understands that some courses may still be in development. Prompts that ask for examples of assignments seek information about the spirit of what students will do and instructors are not bound to the specific details (e.g. writing prompts) provided.

B.  The committee includes faculty from a variety of disciplines. Please remember to briefly explain disciplinary terms, contexts, and/or texts to allow all the members of the committee to best understand how your responses address the question.

C.  As you are answering these questions, please keep in mind that students will need to produce work to assess their fulfillment of the related learning outcomes if applicable.

Questions:

1.a. This Way of Thinking focuses on formal and symbolic representations of objects, structures, and/or experiences. If using disciplinary-specific terminology in your answers, please define and explain ideas clearly.What formal and symbolic representations of objects, structures, and/or experiences will students explore?

1.b. Provide an example (or examples) of an assignment(s) that demonstrates how students will be introduced to formal representations and deepen their understanding of these representations.

2.a. In this Way of Thinking, students will focus on developing representations (numeric, symbolic, graphical, and otherwise) and rules. How will students demonstrate the ability to navigate the structure and rules (e.g. syntactic rules) of the formal systems? Describe the formal, well-defined system(s) which govern the representations in consideration in your answer.

2.b. Provide an example(s) of an assignment(s) where students perform relevant symbolic manipulation.

3.a. This Way of Thinking cultivates students' abilities to move fluently between abstract representations/models and the concrete examples (and/or simpler abstractions) they represent. How will students demonstrate fluency in the analysis (e.g., engaging with first principles and development of the representations) of formal representation and their associate abstract models?

3.b. Please provide examples where students apply their understanding outside of the formal context.

3.c. Please provide examples of assignments where students demonstrate the ability to transition between the formal representations/models and the concrete applications.

Will you be applying for a Thematic Encounter or Thematic Focus designation?

  Yes   No

If yes, you will need to fill out a separate application for either the Thematic Encounter (25% of 4-credit course at 100, 200, or 300 level) or Thematic Focus (100% of course at 200 or 300 level).

Are you applying for an Engagement (only one Engagement is allowed, unless your course is a semester-length study abroad which can apply for GLO and EXP)?

  Yes   No

If yes, you will need to fill out a separate application for the Engagement that applies (please list the Engagement for which your are applying).

(Optional) Additional information (is there anything else that you would like the GECC to know about this course or application?):

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