

**Ohio University**  
**University Curriculum Council**  
**November 8, 2022**  
**Microsoft Teams**

**Present:** Luke Beccasio, Kelly Broughton, Kathleen Brown Pugh, Sherleena Buchman, Shea Burden, James Casebolt, Mario Cinquepalmi, Michele Clouse, Catherine Cutcher, Debra Cox, Bob DeLong, Todd Eisworth, Kristine Ensign, Ann Frymier, Ellen Gordon, Allyson Hallman-Thrasher, Karla Hackenmiller, Katie Hartman, Sara Hartman, Josh Hill, Jess Holliday, Molly Johnson, David Juedes, Pramod Kanwar, Jennie Klein, Zaki Kuruppallil, Sally (Marinellie) Marion-Fetty, Emily McCarty, Brenda Miller, Hannah Nissen, Greg Newton, Beth Novak, Connie Patterson, Beth Quitslund, Nukhet Sandal, Jennifer Smith, Amrit Thapa, Alexis Thomas, Allison White, William Zanutelli

**Absent:** Virginia Dickens, Susan Dowell, Jason Jolley, Macario Llamas, Talinn Phillips, Courtney Silver-Peavey, Jim Strode, Bärbel Such, Loralyn Taylor, Chris Vinyard, Nicole Williamson

**Excused:** Mike Hess, Jatin Srivastava, Lijing Yang, Yuqiu You

**Guests:** Molly Delaval

**Call to Order:** Todd Eisworth called the meeting to order at 3:00 p.m.

- The September 13, 2022 meeting minutes were approved.

**Vice Provost of Faculty Development:** Katie Hartman

- No Report

**Program Committee Report:** Connie Patterson, Chair

## **PROGRAM CHANGES**

### **1. Patton College of Education**

Program Code: BS6307 (Approved)

Program Name: Integrated Mathematics

Department/School: Teacher Education

Contact: Matt Felton Koestler ([felton@ohio.edu](mailto:felton@ohio.edu))

Desired Start Date: Spring 2023

Currently the DARS lists their course requirements as including MATH 3200 or MATH 3210, but MATH 3210 is not an appropriate option. This is partially needed to fulfill licensure/accreditation requirements to ensure all students are covering the same content. There is no change in credit hour requirement.

### **2. Arts & Sciences**

Program Code: BS3105 (Approved)

Program Name: Actuarial Science

Department/School: Mathematics

Contact: Yaqin Feng ([fengy@ohio.edu](mailto:fengy@ohio.edu))

Desired Start Date: Spring 2023

According to feedback from our graduates, our students need more programming experience. Thus, we have decided to require ET 2100 which teaches the language Python, which is more relevant to our majors. This course is 4 credit hours, so it increases the total credit hours from 55 to 59.

### 3. Honors Tutorial College

Contact: Beth Novak ([novakb@ohio.edu](mailto:novakb@ohio.edu)) (Approved)

Desired Start Date: Immediately

We recently met with our accreditor, HLC, and the state of Ohio, and they have informed us that not having a graduation requirement puts us out of federal compliance. HTC will now require all HTC students to meet the 120-hour requirement for a bachelor's degree. This applies to the following program codes.

Advanced Computing (CS)	BS1949
Anthropology	BA1934
Art History	BA1935
Astrophysics	BS1931
Biological Sciences	BS1902
Business Administration	BB1926
Chemistry	BS1904
Classics	BA1932
Communication Studies	BC1918
Communication Sciences and Disorders/HSLs	BS1941
Dance	BF1906
Economics	BS1910
Engineering Physics	BS1925
English	BA1916
Environmental & Plant Biology	BS1901
Environmental Studies	BA1942
Film	BF1924
Geography	BA1944
Geological Sciences	BS1948
History	BA1909
Journalism	BJ1923
Mathematics	BS1903
Media Arts & Studies	BC1920
Music	BA1938
Neuroscience	BS1937
Philosophy	BA1917
Physics	BS1905

## New Program/Certificate

### 1. Center for International Studies

Program Code: BAXX27 (Provisionally approved until 11/18/22)

Program Name: International Studies

Department/School: Center for International Studies

Contact: Joshua Hill ([hillj6@ohio.edu](mailto:hillj6@ohio.edu))

Desired Start Date: Fall 2023

The BA in International Studies introduces students to the study of international affairs from an interdisciplinary perspective. Students will gain expertise in one world region by taking required and elective courses from a variety of disciplines, including three years of language study in a regional language. Students will also select a transregional theme that will structure an additional set of core and elective coursework. In total, 42 credit hours are required for the major, not including the language requirement. The intended audience is students who are already drawn to the four regionally specific Global Studies majors managed by the Center for International Studies (these majors will be discontinued upon the approval of this new major) as well as other students interested in an interdisciplinary approach to international studies. The creation of this undergraduate major will not require any additional resources beyond those already used for the currently existing Global Studies majors.

The program requires 42 credits including one new course, INST 4960 (UCC approved). All other credits will constitute general education, CAS distribution requirements and/or electives chosen by the student. Completion of the BA requires 120 credits.

Category	Number of Credit Hours	Percent of Total
Existing or repackaged curricula: Courses from existing inventory of courses at OHIO	39	93
Revised or redesigned curricula: Courses for which content has been revised for the new program	0	0
New curricula*: Courses developed for the new program that haven't been offered at OHIO	3	7
Total: Must match the total number of credit hours required for the program	42	100

The International Studies major language requirement is the same as CAS's language requirement for humanities and social science majors, with two important exceptions:

- a minimum of three years (rather than two) will be required, and
- students may take 3 years of a single language OR 2 years of a first language and 1 year of a second language

This is a proficiency requirement rather than a credit hour requirement--students can test out of it. As a proficiency requirement rather than a credit hour requirement, it is not counted within the 42 hours needed for the IS major.

Note also that, unlike the existing Global Studies majors, the language requirement is now disconnected from the regional concentration. This will allow students greater flexibility to pursue their intellectual interests (i.e., a student interested in the French colonial empire in Indochina, for instance, could follow the regional concentration for Asia and study the French language).

### **Expedited**

#### **1. College of Arts & Sciences**

Program Code: BA4214

Program Name: History Pre-Law

Department/School: History

Contact: Kevin Uhalde ([uhalde@ohio.edu](mailto:uhalde@ohio.edu))

Desired Start Date: Fall 2023

The three changes being requested are summarized here:

a. Under Prelaw History Major Intradepartmental Course Requirements should be added the following:

1. HIST 3090 American Constitutional History, Part 1: Origins to Reconstruction
2. HIST 3095 American Constitutional History, Part 2: 1880s-Present

b. Under Chronological History Course Requirement, HIST 3090 belongs under Component B: Early Modern History > North American, not under Component C: Modern History > North American as presently.

c. Under Geographical History Course Requirement > Component C: North American History, HIST 3090 belongs under Early Modern, not under Modern as presently.

#### **2. College of Arts & Sciences**

Program Code: BA4253

Program Name: Sociology Criminology

Department/School: Sociology and Anthropology

Contact: Cynthia Anderson ([andersc2@ohio.edu](mailto:andersc2@ohio.edu)) & Bruce Hoffman ([hoffmanb@ohio.edu](mailto:hoffmanb@ohio.edu))

Desired Start Date: Fall 2023

The Department of Sociology is proposing to offer the BA degree in Sociology Criminology as an online degree. It is expected that this will be a popular option for students interested in careers in criminal justice, criminology, and justice related professions given the consistently high interest in sociology-criminology and criminal justice at OHIO and in justice related careers. The curriculum will be identical to the traditional BA in Sociology-Criminology, although the available courses will be slightly limited compared to those available to students in the traditional degree. All the courses needed to complete the major are already regularly taught in an online modality. Online versions of additional classes have been taught during the pandemic and will be developed by faculty into regular offerings to add breadth to the curriculum. It is proposed that the program will be implemented beginning August 2023.

#### **3. College of Arts & Sciences**

Program Code: BA4254

Program Name: Sociology Pre Law

Department/School: Sociology and Anthropology  
Contact: Cynthia Anderson ([andersc2@ohio.edu](mailto:andersc2@ohio.edu)) & Bruce Hoffman ([hoffmanb@ohio.edu](mailto:hoffmanb@ohio.edu))  
Desired Start Date: Fall 2023

The Department of Sociology is proposing to offer the BA degree in Sociology Criminology as an online degree. It is expected that this will be a popular option for students interested in careers in criminal justice, criminology, and justice related professions given the consistently high interest in sociology-criminology and criminal justice at OHIO and in justice related careers. The curriculum will be identical to the traditional BA in Sociology-Criminology, although the available courses will be slightly limited compared to those available to students in the traditional degree. All the courses needed to complete the major are already regularly taught in an online modality. Online versions of additional classes have been taught during the pandemic and will be developed by faculty into regular offerings to add breadth to the curriculum. It is proposed that the program will be implemented beginning August 2023.

#### **4. College of Fine Arts**

Program Code: CTMUSG  
Program Name: Graduate Performance Certificate  
Department/School: School of Music  
Contact: Matt Talbert ([talbertm@ohio.edu](mailto:talbertm@ohio.edu))  
Desired Start Date: Fall 2022

The wording of this graduate certificate is dated and does not reflect the nature of the other certificates offered in the School of Music. Currently, the document reads, “Because this is a non-degree program, students may not concurrently pursue the Master of Music Degree”. We are proposing that graduate students, to align with other certificates in the School of Music, be allowed to work on this certificate concurrently while working on a Master of Music degree.

#### **5. College of Business**

Program Code: CTENTR  
Program Name: Entrepreneurship Certificate  
Department/School: Management  
Contact: Krystal Geyer ([kristal@ohio.edu](mailto:kristal@ohio.edu))  
Desired Start Date: Fall 2022

We are seeking an expedited change approval through UCC to eliminate all barriers to entry for the Entrepreneurship Certificate. We would like to ensure the application, resume, and interview requirements are eliminated and that, when a student fills out the change of program form on Qualtrics, they are instantly added to the Entrepreneurship Certificate.

### **Notifications**

#### *Deactivation*

##### **1. Scripps College of Communication**

Program Code: ND5368

The Scripps College of Communication and School of Media Arts request that the Pre-Media Major (ND5368) be de-activated, effective immediately.

Rationale for suspension:

The Pre-Media Major is longer in use nor a component of curriculum or major offerings. A previous director created this major as a pre-major filter for incoming MDIA students. This process, and by extension this major, is no longer needed. It hasn't been in use since Fall 2019 and there is no intention to restart this major.

## **2. Center for International Studies**

Program Code: BA4409 Global Studies- War and Peace

I am writing on behalf of the Center for International Studies to notify you that we will change the name of our Global Studies—War and Peace major (BA4409) to International Studies—War and Peace. This will be effective in the fall of 2023. There will be no other changes to this program other than the name change at this time.

The purpose of this name change is to align the name of BA4409 with the name of our proposed International Studies major. In the creation of this new major (which is detailed in a separate proposal to the Programs Committee), we have decided to discard the phrase “Global Studies” and to discontinue the four existing Global Studies regional majors (GS-Africa, GS-Asia, GS-Europe, and GS-Latin America) once the new International Studies program is approved.

**Program Review Committee – Bärbel Such, Chair**

### **On-Going Reviews AY 2022-23**

- Site visit completed, review report received and forwarded to program director and dean
  - History
  - Psychology
- Site visit completed, awaiting review report
  - HCOM, Nov. 7-8
- Site visit scheduled; internal reviewers assigned
  - Social and Public Health, Nov. 10
  - Dance, Nov. 17-18
  - Physics & Astronomy, Dec. 1-2
- Site visit scheduled
  - English, Nov. 17-18
  - Environmental and Plant Biology, Jan. 23-24, 2023
  - Chemistry and Biochemistry, Jan. 26-27, 2023
- Awaiting self-study
  - Biological Sciences
  - Social Work [incl. Human Services Technology]

**Individual Course Committee Report: Beth Quitslund, Co-Chair and Allyson Hallman-Thrasher, Co-Chair**

\*Note BRICKS designations in *red italic* are conditional and will not take effect until OT36 approval.

**NEW COURSES**

College	Course	BRICKS
Arts & Sciences	ANTH 2500 / SOC 2500: Applied Statistics in Sociology	<i>ACSW</i>
	ANTH 3630/5630: GIS in Anthropology	BLD
	CARS 2600: Hinduism	FIE
	CARS 2610: Buddhism	FIE
	CARS 3470/5470: Sex and the Bible	BDP/BER [T2CP]
	CARS 4910: Field Study in Mediterranean Archaeology	BDP/BLD [T3E]
	CAS 4910: College of Arts and Sciences Internship	BLD
	ENG 3910: Sigma Tau Delta Executive Leadership	BLD
	ENG 3920: Literary Magazine Editorship	BLD
Patton College	EDPL 3620: Hip-Hop Education in Practice	
	EDSP 4100: Writing for Advocacy	FAW
Scripps College	MDIA 6960: MFA Production Thesis in Scripps College of Communication	

**COURSE CHANGES**

College	Course	BRICKS	Changes
Arts & Sciences	ENG 2200: Introduction to Literature and Health	[ACSW]	Name (from "Introduction to Literature and Medicine")
	LING 4921/5921: TELT Teaching Practicum	BLD	Name (from "CALL Teaching Practicum"), desc, LOs, texts, KGFs; add BRICKS category

College	Course	BRICKS	Changes
	POLS 3060: Politics of Appalachia	BDP	Desc, LOs; add Course Topics info, BRICKS category
	POLS 4440/5440: East Asia in World Politics	BDP	Desc, LOs, prereqs; add Course Topics info, BRICKS category
	POLS 4480/5480: Comparative Public Policy	Cap	LOs, course component type, Course Topics info; add BRICKS category
Fine Arts	ART 1600: Aesthetics of Architecture and Design	<i>PHA</i> [T2FA]	Desc, LOs, Topics, KGFs; add BRICKS category
	FAR 5930: Independent Study		Desc, GEC, LOs, possible cr hrs, contact hrs, Course Topics info
Health Sciences & Professions	AT 3693: Musculoskeletal Movement in Performing Arts	BSL [T2AS]	Desc, LOs, Course Topics info; add BRICKS component
	HLTH 5220: Graduate Seminar in Appalachian Studies (from IHS 5220)		Prefix (from IHS)/department
	NUTR 3300/5300: Principles of Quantity Food Production		Prereqs, Course Topics info
Patton College	RFM 2150: Elementary Textiles		Prereqs, major set-aside
Scripps College	ITS 4020/5020: Strategic Decision Making in Information		Desc, LOs, prereqs, Course Topics info
	JOUR 4390/5390: Storytelling on Business and the Economy		Name (from "Business Reporting"), desc, LOs, prereqs; add Course Topics info
	VICO 5401: Aspects of Photo Communication		Desc, credit hrs, to not repeatable, LOs; add Course Topics info

### General Education Committee Report: Nukhet Sandal, Chair

- 2<sup>nd</sup> Reading – Policies Governing Quantitative Reasoning Courses in BRICKS (Passed)

Molly Johnson: So Psych 1110 or math 1500, are they going to continue to be considered to meet the quantitative reasoning?

Todd Eisworth: Yes. As a part of the policies put through last year, any course that's approved for quantitative reasoning, whether it be in arches or foundations, can cover the foundations requirement if it's to the student's benefit. We didn't want students to have a credit for calculus and need to take a foundations course because calc one is in the arches.

### Policies Governing Quantitative Reasoning Courses in BRICKS

This memo documents the effect on BRICKS of recent changes in the way in which the state handles quantitative courses in general education. It also proposes some policy changes to address the problems that have arisen. The goal is to construct a framework that will reconcile our current practice concerning quantitative reasoning courses with the Ohio Department of Higher Education (ODHE) implementation of Ohio Transfer 36 (OT-36).



## Background

Quantitative reasoning is one of the Common Goals in place for all undergraduate degrees from Ohio University, and courses associated with this common goal appear in BRICKS in two places: Foundations Quantitative Reasoning (FQR) and Arches Constructed World (ACSW). Our current policy requires that courses fulfilling the Quantitative Reasoning requirement in BRICKS must be approved by OT-36, but recent changes at the state level have made this alignment more difficult.

## ODHE Constraints

The Math, Stats, and Logic (MSL) portion of OT-36 is structured differently than the other disciplinary areas. Prior to May 2021, the category consisted of a generic category (TMMSL) together with several other narrowly prescribed categories that are analogous to the Transfer Assurance Guidelines (TAGs) in place for other disciplines. This conflation between TAGS and OT-36 at the state level has the following consequence:

- Quantitative OHIO courses with OT-36 approval in the same narrow MSL category **MUST** be treated as equivalent by our institution. Thus, PSY 1110 and MATH 1500 (both approved in the category TMM010 Basic Stats) must be treated as equivalent courses at OHIO.

This restriction is not in place for the so-called generic category of Math/Stats/Logic courses in OT-36 (denoted TMMSL), and so OHIO has several quantitative courses approved in this category. However, ODHE retired the TMMSL category for quantitative courses in March 2021, and this has consequences for our curriculum:

- Quantitative courses that are not currently in OT-36 cannot be approved for inclusion unless they fit into one of the specific categories (and are therefore counted as equivalent to all other courses in that specific category).
- Quantitative courses that are currently approved in the generic category TMMSL will be reviewed within the next five years, and those that do not fit into one of the narrow categories will be removed from OT-36.

The intent of ODHE is to limit the extent of introductory quantitative courses to a few standard categories that are tied to their guaranteed transfer pathways initiative. The desired outcome is to steer students away from quantitative courses that do not have a broad curricular function, as this will help minimize the chance of students having to take an additional unexpected quantitative course after transferring institutions. Since our general education program is tied to ODHE, there have been unintended consequences for BRICKS.

## Local Issues

Our current policy is that courses fulfilling Quantitative Reasoning requirements in BRICKS must be approved as MSL courses at the state level. The retirement of the TMMSL category requires us to adjust this policy in the short term, primarily because ODHE has yet to draft learning outcomes for some of the standard courses used in general education. The specific problems are:

- We have courses that are currently approved for TMMSL, but which will not fit in any of the remaining categories. These courses are scheduled to lose OT-36 certification at some point in the next five years, unless ODHE builds a corresponding category. PHIL 1200 (Principles of Reasoning) is the most prominent example of an OHIO course in this situation, although ODHE is currently building a suitable category.
- We have courses that were previously approved for one of the narrow MSL categories which have been removed because of the forced transfer equivalence. Thus, the basic statistics category TMM010 contains the OHIO courses MATH 1500 and PSY 1110, but MATH 2500 was removed from this category because it is not equivalent to the lower-level courses.
- We have courses that were contingently approved for BRICKS that cannot be submitted to OT-36 because TMMSL has been retired, and the courses do not fit one of the remaining categories.

## Recommendations

Requiring all BRICKS quantitative reasoning courses to receive OT-36 approval is not feasible given that there are significant omissions in the available categories. At the same time, we should attempt to keep our alignment with the goals of ODHE for quantitative reasoning courses. To do this, we propose the following policies:

1. FQR courses should be restricted to OT-36 approved courses. An exception for PHIL 1200 is included as the ODHE is constructing an OT-36 category for such courses.
2. Only FQR courses can have PL1 (Placement Level 1) as a pre-requisite.<sup>1</sup>
3. There will be a local process for approving quantitative courses that satisfy the guidelines formerly governing the TMMSL category of OT-36. Courses approved in this matter must be in the ACSW component of BRICKS. A process is outlined below.
4. Quantitative courses in ACSW must have an FQR-level pre-requisite that can be bypassed by placement. To take such a course, a student will either need credit for an FQR course or have a math placement level of at least PL2.<sup>2</sup>
5. Courses that are approved as exceptions to the OT-36 requirement should undergo periodic review, with the same frequency as courses in the OT-36. If the structure of the OT-36 MSL category changes so that a matching category comes into existence, the course should be submitted to OT-36 as soon as the option becomes available.
6. OT-36 approved quantitative courses that lose this status as part of the state-level review cycle must subsequently be approved by our local process to maintain status in BRICKS.

## Approval Process for Quantitative Courses in BRICKS

The process outlined below mirrors the appeal process in place for other areas of BRICKS and puts in place a mechanism that allows quantitative courses to achieve BRICKS approval as ACSW in situations where OT-36 approval is not an option.

- A course is considered eligible for inclusion in BRICKS as a quantitative reasoning course if:
  - the course meets the guidelines previously in place for the TMMSL category of OT-36 (Appendix A), and
  - the course meets the quantitative reasoning learning outcomes for BRICKS (Appendix B).
- An eligible course can be conditionally approved for inclusion in BRICKS through the standard curricular process.
- A conditionally approved course that matches an OT-36 MSL category should be submitted to the state panel, and the normal curricular process (including any appeal) will be in place.
- A conditionally approved course that does NOT match an OT-36 MSL category must be evaluated by a faculty panel through a local process analogous to our appeal process. This will consist of the following steps:
  - The chair of UCC (University Curriculum Council) shall appoint a panel of three to five faculty members with expertise in mathematics, statistics, or logic. The chair of UCC shall also appoint one ad-hoc (non-voting) member from GEC or ICC (Individual Course Committee) to serve as the UCC advisor to the panel.
  - The department sponsoring the course should submit the following documents to the panel:

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<sup>1</sup> Restricting the PL1 prerequisite to OT-36 approved courses in FQR ensures that the students of greatest concern to ODHE are funneled into quantitative courses that are tied to specific transfer pathways and which can potentially be supported by co-requisite courses. This honors the reasoning behind the restriction of OT-36 MSL courses to a few standard categories.

<sup>2</sup> Quantitative courses in the Arches can still satisfy FQR requirements if that is what the student needs. Thus, a PL2 student with no mathematics transfer credit can enroll in PSY 2110 and satisfy FQR, just as now. The student would need to satisfy the ACSW requirement through a humanities or arts class instead.

- A narrative explaining how the course meets the eligibility requirements for inclusion as a quantitative course in BRICKS
- Copies of course information from OCEAN
- Sample syllabus
- The faculty panel will review the submitted material, and a vote is taken on whether the course should be approved for inclusion in BRICKS based on the eligibility criteria in Appendix A and Appendix B.
- A recommendation of *approval* of the course as an exception to the OT-36 requirement requires at least 2/3 of the panel to agree that the course meets the eligibility criteria. Otherwise, the recommendation of the panel is for *disapproval*.
- Faculty panel recommendations will be submitted to GEC and ICC. Following this, ICC will submit recommendations to UCC at the next UCC meeting for a full UCC vote.

## Appendix A: Ohio Transfer 36 Requirements

Ohio Transfer 36 Mathematics, Statistics, and Logic courses must satisfy the following:

### Guidelines

- A credit-bearing, college-level course in Mathematics must use the standards required for high school graduation by the State of Ohio as a basis and must do at least one of the following: 1) broaden, or 2) deepen, or 3) extend the student's learning.
- The course does not cover variable learning outcomes from term to term.
- The course is not an upper-division course.
- The course is in the areas of mathematics, or statistics, or logic.

### Excluded Courses

- Remedial or developmental courses, special topics courses, narrowly focused courses, technical or pre-technical courses and skills-based courses.
- Courses that focus exclusively on content coverage without addressing the learning outcomes for the Ohio Transfer 36.
- Career preparation courses, non-credit continuing education courses, and life experience courses (unless life experience credit, such as military training or other prior learning experience, becomes approved in the future for an Ohio Transfer 36 credit by the statewide faculty review panel).

## Appendix B: BRICKS Quantitative Reasoning Outcomes

Consistent with AAC&U's (2009) VALUE rubrics, Ohio University defines quantitative reasoning as "a habit of mind, competency, and comfort in working with numerical data."

Individuals with strong quantitative reasoning skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence, and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

Courses, programs, or learning experiences designated as teaching quantitative reasoning will provide opportunities for learners to develop quantitative reasoning skills through the following course-embedded learning experiences.

- Learners will evaluate arguments in a logical fashion and develop competence in analysis and logical argument.
- Learners will develop and use the concepts of numeracy to investigate and explain quantitative relationships and solve problems in a variety of contexts.
- Learners will make decisions by analyzing mathematical models, including situations in which the student must recognize and/or make assumptions.
- Learners will use the language and structure appropriate to the subject matter to investigate, represent, make decisions, and draw conclusions.

### Learning Outcomes

Courses, programs, or learning experiences designated as teaching quantitative reasoning will provide opportunities for learners to achieve the following six learning outcomes.

1. *Interpretation*. Students will be able to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2. *Representation*. Students will be able to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
3. *Calculation*. Students will be able to calculate relevant information using various mathematical formulas.
4. *Application / Analysis*. Students will be able to make judgments and draw appropriate conclusions based on the quantitative analysis of data while recognizing the limits of this analysis.
5. *Assumptions*. Students will be able to make and evaluate important assumptions in estimation, modeling, and data analysis.
6. *Communications*. Students will be able to express quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized).