**Proposal to Revise ASC Requirements for Social Science:**

**Air Transportation Bachelor of Arts Program**

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Department of Geography

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**Proposal to Revise ASC Requirements for Social Science:**

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**I. Relation Between the Geography Department and the Center for Aviation Studies (CAS)**

***General Information***

This proposal is to revise the existing Social Sciences: Air Transportation major, which was last updated in Autumn 2012. These suggested changes reflect recent curricular revisions and a refocusing of core courses in consultation with the Center for Aviation Studies (CAS).

***Rationale***

The Social Sciences: Air Transportation Bachelor of Arts Degree program (referred to as Air Transportation from here on) was designed by the prior department Chair, Morton O’Kelly (now Professor Emeritus), and Assistant Dean of Curriculum and Instruction, Deborah Haddad. The goals of the prior revision noted the value of a liberal arts baccalaureate for professionals entering the aviation industry, particularly in the development of critical thinking and analytical skills.

The prior ASC core in the degree were designed to allow students to use any course in each social science GE category to meet credit hour requirements, and to complete a narrow set of Geography core courses specifically related to Weather and Climate (Geog 5900) and the spatial analysis of transportation systems. Dr. O’Kelly is an expert in Transportation Geography and Geographic Information Science (GIS). Thus, the design of the Geography core reflected his research priorities, resulting in a curriculum for a well-trained transportation geographer with an emphasis on Geographic Information Systems (e.g., in a spatial database environment using ArcGIS). We want to retain the GIS courses as options but recognize that not every Air Transportation graduate will need these highly technical skills.

Eight years in, the program has matured, and the Air Transportation students have been fully integrated into our Geography department. We wish to build on this success and renew and refresh the most obvious points of connection with our discipline. We have scrutinized feedback from graduation surveys, our advisors who work closely with Air Transportation students, and the faculty who teach the required Geography core.

The Social Science: Air Transportation degree has two options: pilot and non-pilot. Staff and advisors in CAS and Geography have agreed that deeper engagement across human and physical geography can build skills toward richer and systematic options for air industry professionals. This logic fits well with the more focused set of options we want to propose on our side: a little more structure and deeper training in Human Geography (the study of people and place) and atmospheric science.

***Process***

Starting in Autumn 2018, the Center for Aviation Studies staff and the Undergraduate Studies Committee (UGS) in the Department of Geography both began parallel curricular revision processes. Brian Strzempowski of CAS regularly attended UGS curriculum meetings, and Darla Munroe (Chair, Department of Geography) attended two CAS curriculum meetings. Both groups worked with Teresa Johnson, formerly Associate Director of the Drake Institute, to implement a backwards-design process, collaboratively identifying and writing program-level goals, objectives and proficiencies. In Spring 2019, we shared our overall curricular maps with a careful eye to how a BA in Geography matched the evolving needs of the Air Tran students.

**II. Brief Summary of Proposed Changes to Core Requirements**

The logic and justification of the proposed changes to the ASC core and elective requirements is as follows:

* Retain the Geography core classes that continue to serve student needs best
* Move the two GIS methods classes (Geog 5210 Fundamentals of GIS, and Geog 5200 Cartography and Map Design) to electives
* Broaden the set of Geography core courses (Geog 3702, Geog 3750) so that the same number of credits are required in our program, but students have more choices and thus greater flexibility
* Narrow the list of other ASC GE electives to those classes Air Transportation students regularly take and find useful
* Modify the content of courses to accommodate interests of Air Transportation students (elaborated below)

**III. Courses in the Air Transportation major in Geography**

***New Course Proposals*** – None

***Changes to Existing Courses***

Darla Munroe and members of Geography’s Undergraduate Studies Committee met with CAS staff and advisors to discuss the interests of Air Transportation majors in Geography. As a result, we moved 2 previously required courses in GIS to electives, and included courses in the core requirements that Air Transportation students have indicated that they found useful and interesting. In addition, CAS staff and advisors indicated that Air Transportation students need courses in weather and climate, one of Geography’s strengths.

Course Descriptions

REQUIRED COURSES

GEOG 5300, Geography of Transportation

This course previously served both Air Transporation majors and Geography graduate students focused on advanced methods in transporation geography such as spatial interaction, network analysis, allocation, and demand modeling. Based on a discussion with CAS on the broader context of Air Transportation training, professional development, and the need for certain skills and knowledges, we updated GEOG 5300 to better serve the Air Transportation majors. The course now focuses on transportation applications rather than methods, and covers multimodal transportation systems, including air, land, freight, and passenger transportation. Students learn the theories, applications, and real-world issues related to transportation in connection to social, environmental, and economic systems. The course lays the foundation for a broad perspective in transportation, and complements aviation courses in the Air Transportation curriculum.

ELECTIVE COURSES

Geog 2200.01, Mapping Our World

This course is an introduction to the power of maps, covering spatial representation, visual literacy, and geographic information technology in a global society. For students who desire basic spatial analysis and mapping skills, this course builds geographic literacy (this course is a more basic version of the content of 5200 and 5210, listed below).

GEOG 3750, Geography of North America

This course focuses on geographical analysis of North America; spatial patterns and processes associated with culture, politics, economy and social difference at international, national, regional and urban scales. Similarly, this course builds experience analyzing current trends in North America, and should be broadly useful to industry professionals.

Geog 3900, Global Climate Change: Causes & Consequences

This course examines the natural and human factors that force changes in our climate and environment and explores strategies for a sustainable environment in the future. CAS staff and advisors indicated that CAS staff and advisors indicated that adding an additional elective for further knowledge on climate change and sustainability strategies is desired by Air Transportation students.

Geog 5200, Cartography & Map Design

A study of the cartographic techniques of map compilation and design including generalization, symbolization, reproduction, and GIS-based mapping with an emphasis on thematic mapping. This course formerly was required; we are moving it to the elective list for those students who wish to build skills in digital mapping.

Geog 5210, Fundamentals of GIS

Basic principles of geographic and land information systems and their use in spatial analysis and information management. This course formerly was required; we are moving it to the elective list for those students who wish to build skills in geographic databases.

GEOG 5301, Sustainable Transportation

A module was added to this course on aviation, specifically sustainability aspects of aviation in intercity transportation.

**IV. Implementation Plan for Changes**

***Reallocation of Credit Hours from Old to New Advising Sheets***

GEOG 5200 and 5210 have been removed from the Core/Required section of the old advising sheet, and have been added to the Social Science Elective part of the major along with other geography courses. Air Transportation majors enroll in 4 Social Science Electives courses, two of which must now be from Geography; the remaining 2 are from two of the other 3 categories. Electives are increased from 9 to 12 specifically for students *not* pursuing Professional Pilot Certification; this change was driven by CAS.

See **APPENDIX A** for the new advising sheet and **APPENDIX B** for the old advising sheet

***Implementation Plan for Existing Students***

Only new Air Transportation students (incoming freshmen, transfer, or major changers) will be allowed to follow the updated curriculum beginning the semester of implementation. All current Air Transportation students will continue to follow the old curriculum.

***Sample 4-Year Timeline for* Bachelor of Arts Degree in Social Sciences Air Transportation**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **First Year**  | **Autumn**  |   | **Spring**  |   |
|   | Aviation 2000  | 3  | Aviation 2200  | 3  |
|   | Aviation 2100  | 5   | Geography 3300\*  | 3  |
|   | Geography 2400  | 3  | Foreign Language GE  | 4  |
|   | English 1110  | 3  | Math GE  | 3  |
|   | ARTSSCI 1100.14  | 1  |   |   |
|   |  **Total Credit Hours**  |  15  |  **Total Credit** **Hours**  |  13 |
|  |  |  |  |  |
|  **Second Year**  | **Autumn**  |   | **Spring**  |   |
|   | Aviation 2300  | 3  | Aviation 3000  | 3  |
|   | Foreign Language GE  | 4  | Foreign Language GE  | 4  |
|   | 2nd Writing GE  | 3  | Social Science Elective  | 3  |
|   | Data Analysis GE  | 3  | History GE  | 3  |
|   | Aviation Elective  **Total Credit Hours**  | 3  16  | Aviation Elective  **Total Credit** **Hours**  | 3  16  |
|  |  |  |  |  |
|  **Third Year**  | **Autumn**  |   | **Spring**  |   |
|   | Aviation 3200  | 3  | Aviation 3300  | 3  |
|   | Geography 5300\*  | 3  | Visual & Performing Arts GE  | 3  |
|   | Natural Science GE w/Lab  | 4  | Social Science Elective  | 3  |
|   | Social Science Elective  | 3  | Aviation Elective  | 3  |
|   | Aviation Elective  | 3  | Natural Science (no lab)  | 3  |
|   |   |   |   |   |
|   | **Total Credit Hours**  | 16   | **Total Credit** **Hours**  | 15  |
|  |  |  |  |  |
| **Fourth Year**  | **Autumn**  |   | **Spring**  |   |
|   | Geography 5900\*  | 3  | Aviation 4500  | 3  |
|   | Social Science Elective   | 3  | Cultures & Ideas GE  | 3  |
|   | Natural Science (no lab)  | 3  | Global Studies GE  | 3  |
|  | Social Diversity GE | 3 | Global Studies GE | 3 |
|   | Literature GE  | 3  | GE Course (or elective)  | 3  |
|   | **Total Credit Hours**  | 15  | **Total Credit** **Hours**  | 15  |
|   |  |  |  |  |

*Note****:*** *Students should plan carefully to overlap Social Diversity GE and Global Studies GE with other GE categories to allow more flexibility if pursuing a minor.*

***Impacts on other courses***

In consulatation with CAS staff and advisors, we deleted several courses from the list of electives from other ASC departments (outside Geography) because Air Transportation infrequently enroll in these courses; accordingly, we anticipate no impact. The deleted courses include: PSYCH 43089 and 4508; SOC 3302, 2370, 3315; and ECON 3048, 4600, 4700, 5850. We have a refocused (smaller) set of ASC GE electives that reflect courses that Air Transportation students have found most useful per our discussions with CAS staff and advisors.

**V. The Insertion of Revisions to the Air Transporation Major in Overall Curricular Revision in Geography**

***Status of Curricular Revision in the Geography Department***

The Geography department began curricular revision during the ’19-’20 academic year and is still in the midst of discussions and revision. We began the process during a faculty meeting (inclusive of all faculty across specializations) in which each faculty member indicated salient concerns regarding what we want our students to know and be able to apply to real-world problems. Drawing from this meeting, last year the Undergraduate Studies Committee (UGS) began the curricular revision process by developing a document of program goals, ELOs, and proficiencies under the guidance of Teresa Johnson, then at UITL.

Our department is interdisciplinary, including Human Geography, encompassing the Urban, Regional, and Global Studies and Environment & Society tracks; Atmospheric Science; and GIScience. This academic year, faculty associated with each specialization convened to discuss curricular revision relative to the requirements of their respective fields.

Despite the separation of the groups regarding processes of curricular revision, students across all majors will have covered all the proficiencies indicated in the document of program goals/ELOs/proficiencies; although content and course requirements differ across the specializations, proficiency coverage is the same.

Developing an explicit assessment plan linked to the proficiencies is on the agenda for the ’21-’22 academic year.

***The Division of Labor between Geography and CAS Regarding Air Transportation Majors in Geography***

All Air Transportation majors will cover all proficiencies in Geography indicated in the document, except for those under the last Goal (E), Professional Development.  Geography covers professional development in a professionalization course in each specialization; Air Transportation majors enroll in a professionalization course in CAS. APPENDIX C indicates the program goals/ELOs/proficiencies for Geography.

**VI. Assessment Plan**

Per V above, the Geography department is in the midst of curriculum revision. Assessment is on the agenda for the next academic year.

**APPENDIX A: New Advising Sheet, Air Transportation**

**Air Transportation Major** (121 credit hours)

**Air Transportation Major with Professional Pilot Certification (PPC)** (136 credit hours)

 **CORE COURSES** (12)

**AVIATION CORE** **GEOGRAPHY CORE**

2000: Intro to the Aviation Industry            2400: Economic & Social Geography

2001: Private Pilot Fundamentals 3300: Transportation Security

2200: Aviation Communication             5300: Geography of Transportation

2300: Aircraft Performance & Weather   5900: Weather, Climate & Global Warming

3000: Aviation Management & Marketing

3200: Aviation Regulations

3300: Aviation Human Factors & Safety

4500: Aviation Capstone

**AVIATION ELECTIVES** (12 hrs; Non-PPC Major)

2101: Private Pilot Flight Lab I

2102: Private Pilot Flight Lab II

2900: Air Traffic Control Fundamentals

3193: Individual Studies in Aviation

3400: Aviation Accident Investigation

3500: Airline Labor Relations

3600: Business & Corporate Aviation Mgmt

3700: Building a Diverse Workforce in Aviation

4200: Aviation Dispatch Fundamentals

4201: Applied Aircraft Dispatch

4400: Airport Management

5000: Air Transportation Analysis II

5193: Individual Studies in Aviation

5194: Group Studies in Aviation

**For Professional Pilot Certification (PPC)**

2101: Private Pilot Flight Lab I

2102: Private Pilot Flight Lab II

2501: Commercial Cross Country Flight Lab

3100: Instrument Flight Fundamentals

3101: Instrument Flight Lab

4100: Commerical Flight Operations

4101: Commercial Pilot Flight Lab

4300: Advanced Multi-Engine Operations

*Select from the following: 4301 OR 5100 & 5101*

4301: Commercial Pilot MEL Flight Lab

5100: Flight Instruction Methodology

5101: Flight Instructor ASE Flight Lab

*Optional (not required for the major)*

5200: Instrument Instruction Methodology

5201: Instrument Instruction Flight Lab

5102: Flight Instructor AME Flight Lab

**SOCIAL SCIENCE ELECTIVES** (12 credit hours)

Student must complete four (4) courses from the lists provided

(**TWO must be from Geography**, and the remaining two from

the remaining categories).

Social Science Elective courses that are also approved GE

Courses can overlap with the GE category for which they

have been approved.

Any Social Science Elective course that is not an approved

GE course can overlap with the GE Social Science and

GE Open Option categories only.

**GEOGRAPHY**

2200.01: Mapping Our World

3600: Space, Power & Political Geography

3701: The Making of the Modern World

3702: Life & Death Geographies

3750: Geography of North America

3900: Global Climate Change: Causes & Consequences

5200: Cartography & Map Design

5210: Fundamentals of GIS

5301: Sustainable Transportation

5700: Geography of Development

5802: Globalization & Environment

**INDIVIDUAL & SOCIAL**

COMM 2367: Persuasive Communication

COMM 2331: Strategic Communication Principles

COMM 3331: Communication in Decision Making

COMM 3545: Human-Computer Interaction

INTSTD 5195: Selected Topics in International Studies

POLITSC 2150: Voters & Elections

**INSTITUTIONS**

COMM 2540: Intro to Communication Technology

COMM 3325: Intro to Organizational Communication

COMM 3668: Intercultural Communication

COMM 3443: Global Media

INTSTD 4800: Cultural Diplomacy

INTSTD 5800: International Law

POLITSC 3115: Intro to the Policy Process

POLITSC 4200: Politics of Modern Democracies

SOC 2309: Intro to Law & Society

**SECURITY**

COMM 3330: Communication & Conflict Management

COMM 3597.02: Media & Terrorism

INTSTD 3701: Intro to Homeland Security

INTSTD 4700: Terror & Terrorism

POLITSC 4318: Politics of International Terrorism

PSYCH 4525: Psychology of Personal Security

**APPENDIX B: *Old* Advising Sheet, Air Transporation**

**Social Sciences Air Transportation (Bachelor of Arts)**

**Air Transportation Major**

Requires 124 Credit Hours

**Air Transportation Major with Professional Pilot Certification (PPC)**

Requires 139 Credit Hours

**CORE COURSES** (14 courses)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Title** | **Hours** |  | **Course** | **Title** | **Hours** |
| AVIATN 2000 | Intro to the Aviation Industry | 3 |  | GEOG 2400 | Economic & Social Geography | 3 |
| AVIATN 2100 | Private Pilot Fundamentals | 5 |  | GEOG 3300**\*** | Transportation Security | 3 |
| AVIATN 2200 | Aviation Communication | 3 |  | GEOG 5200 | Cartography & Map Design | 3 |
| AVIATN 2300 | Aircraft Performance & Weather | 3 |  | GEOG 5210 | Fundamentals of Geographic | 3 |
| AVIATN 3000 | Aviation Management & Marketing | 3 |  |  | Information Systems |  |
| AVIATN 3200 | Aviation Regulations | 3 |  | GEOG 5300\* | Geography of Transportation | 3 |
| AVIATN 3300 | Aviation Human Factors & Safety | 3 |  | GEOG 5900**\*** | Weather, Climate & Global Warming | 3 |
| AVIATN 4500 | Aviation Capstone | 3 |  |  |  |  |
|  |  |  |  | **\*** *Indicates course is offered only one term per year.* |

**AVIATION ELECTIVES**

**For Non-PPC Majors** (9 credit hours) **For Professional Pilot Certification (PPC)**

**Students pursuing the PPC will work with the Center for Aviation Studies Advisor for enrollment in all flight lab courses.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Course** | **Title** | **Hours** |  | **Course** | **Title** | **Hours** |
| AVIATN 2101 | Private Pilot Flight Lab I | 2 |  | AVIATN 2101\*\*\* | Private Pilot Flight Lab I | 2 |
| AVIATN 2102 | Private Pilot Flight Lab II | 2 |  | AVIATN 2102 | Private Pilot Flight Lab II | 2 |
| AVIATN 2900\* | Air Traffic Control Fundamentals | 3 |  | AVIATN 2501 | Commercial Cross Country  | 2 |
| AVIATN 3193 | \*\*Individual Studies in Aviation | 2-5 |  |  | Flight Lab |  |
| AVIATN 3400**\*** | Aviation Accident Investigation | 3 |  | AVIATN 3100 | Instrument Flight Fundamentals | 3 |
| AVIATN 3500**\*** | Airline Labor Relations | 3 |  | AVIATN 3101\*\*\* | Instrument Flight Lab | 3 |
|  |  |  | AVIATN 4100 | Commercial Flight Operations | 3 |
| AVIATN 3600\* | Business & Corporate Aviation  | 3 |  | AVIATN 4101\*\*\* | Commercial Pilot Flight Lab | 3 |
|  | Management |  |  | AVIATN 4300\* | Advanced Multi-Engine Operations | 2 |
| AVIATN 3700**\*** | Building a Diverse Workforce inAviation | 3 |  | *Select from the following (4301 OR 5100 & 5101):* |  |
| AVIATN 4000\* | Air Transportation Analysis I | 2-5 |  | AVIATN 4301\*\*\* | Commercial Pilot MEL Flight Lab | 2 |
| AVIATN 4193 | \*\*Individual Studies in Aviation | 3 |  |  OR |  |  |
| AVIATN 4200**\*** | Aviation Dispatch Fundamentals | 3 |  | AVIATN 5100 | Flight Instruction Methodology | 2 |
| AVIATN 4201**\*** | Applied Aircraft Dispatch | 3 |  | AVIATN 5101\*\*\* | Flight Instructor ASE Flight Lab | 2 |
| AVIATN 4400**\*** | Airport Management | 3 |  |  |  |  |
| AVIATN 5000\* | Air Transportation Analysis II | 3 |  | *The following courses are available, but not required for degree completion:* |
| AVIATN 5193 | \*\* Individual Studies in Aviation | 2-5 |  | AVIATN 5200 | Instrument Instruction Methodology | 2 |
| AVIATN 5194 | \*\*Group Studies in Aviation | 2-5 |  | AVIATN 5201 | Instrument Instruction Flight Lab | 1 |
|  |  | AVIATN 5102 | Flight Instructor AME Flight Lab | 1 |
| *\* Indicates course is offered only one term per year.* |  |  |  |  |
|  |  |  |  |  |
|  |  |

**SOCIAL SCIENCE ELECTIVES** (12 credit hours)

|  |  |  |
| --- | --- | --- |
| **Requirements for Social Science Electives** |  |  |
|  |  |  |  |  |
| Student must complete four courses from the lists provided  |  |  |  |  |
| (one from each category and a fourth from category of |  |  |  |  |
| choice). |  |  |  |  |
|  |  | **Security** |
| Social Science Elective courses that are also approved GE  |  | **Course** | **Title** | **Hours** |
| Courses can overlap with the GE category for which they |  | COMM 3330 | Communication & Conflict | 3 |
| have been approved. |  |  | Management |  |
|  | COMM 3597.02 | Media & Terrorism | 3 |
|  |  |  |  | INTSTD 3701 | Introduction to Homeland Security | 3 |
| Any Social Science Elective course that is not an approved  |  | INTSTD 4700 | Terror and Terrorism | 3 |
| GE course can overlap with the GE Social Science and  |  | POLITSC 4318 | Politics of International Terrorism | 3 |
| GE Open Option categories only. |  | PSYCH 4525 | Psychology of Personal Security | 3 |
|  |  |  |  | SOC 3315 | Sociology of Terrorism | 3 |
|  |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
| **Individual & Social** |  | **Institutions** |
| **Course** | **Title** | **Hours** |  | **Course** | **Title** | **Hours** |
| COMM 2367 | Persuasive Communication | 3 |  | COMM 2540 | Intro to Communication Technology | 3 |
| COMM 2331 | Strategic Communication Principles | 3 |  | COMM 3325 | Intro to Organizational Communication | 3 |
| COMM 3331 | Communication in Decision Making | 3 |  | COMM 3668 | Intercultural Communication | 3 |
| COMM 3545 | Human-Computer Interaction | 3 |  | COMM 3443 | Global Media | 3 |
| GEOG 3600 | Space, Power & Political Geography | 3 |  | ECON 3048 | > Ethics & Social Responsibility in Economic Life | 3 |
| GEOG 5700 | Geography of Development | 3 |  | ECON 4600 | International Economic Relations | 3 |
| INTSTD 5195 | Selected Topics in International | 3 |  | ECON 4700 | > Government & Business | 3 |
|  | Studies |  |  | ECON 5850 | > Labor Economics | 3 |
| POLITSC 2150 | Voters & Elections | 3 |  | GEOG 3701 | The Making of the Modern World | 3 |
| PSYCH 4309 | Human Motor Control & Learning | 3 |  | GEOG 3702 | Life & Death Geographies: Global  | 3 |
| PSYCH 4508 | > Psychology of Judgment & | 3 |  |  | Population |  |
|  | Decision Making |  |  | GEOG 5802 | Globalization & Environment | 3 |
| PSYCH 4521 | > Personnel Psychology | 3 |  | INTSTD 4800 | Cultural Diplomacy | 3 |
| SOC 3302 | Technology & Global Society | 3 |  | INTSTD 5800 | International Law | 3 |
| SOC 2370 | Social Psychology in Sociological  | 3 |  | POLITSC 3115 | Intro to the Policy Process | 3 |
|  | Perspective |  |  | POLITSC 4200 | Politics of Modern Democracies | 3 |
|  |  |  |  | SOC 2309 | Intro to Law & Society | 3 |
| *> Indicates course has a prerequisite.* |  |  |  |  |

**APPENDIX C: Geography Department Program Goals, ELOs, Proficiencies**

**codes for level of proficiency**

(B): beginning; (I) intermediate; (A) advanced; (S) S= specialized proficiency for students engaged in independent research towards theses or other projects

**Goal A: Human, Environmental, and Spatial Concepts**

Students understand various conceptual approaches and their context to interpret patterns, processes and their relation.

**ELOs**:

1. Conceptualize human, environmental, or spatial problems

 a. Describe the spatial and historical context of a problem (B)

 b. Identify the ‘ecological fallacy’ (the inappropriate homogenization or aggregation of differentiated phenomena within a unit of analysis, using scale as an analytical unit) (B)

 c. Examine dynamics within a place’s or system’s boundaries, and implications for real-world problems (I)

 d. Examine dynamics that connect places or systems across space, and implications for real-world problems (I)

 e. Evaluate processes that operate at different scales and their effects (A)

2. Critically evaluate different approaches to describe, explain, or predict real-world experience

 a. Describe the strengths and weaknesses of various approaches for their utility in interpreting real-world experience (B, I)

 b. Explain the contexts in which various approaches were developed (A)

 c. Critically evaluate various approaches in their field of study (A)

3. Appraise the relation between concepts and real-world experience

 a. Interpret patterns (B)

 b. Critique how knowledges in their fields are used in developing solutions to real-world problems (I)

 c. Relate research findings to debates about different approaches to research (A)

 d. Relate patterns to processes to assess causal relations (A)

**Goal B: Research Strategies, Methods and Data**

Students are able to apply appropriate methods and data, to transform data into actionable knowledges to support ethical scholarship and decision making.

**ELOs**:

1. Gather information regarding data and their context to draw conclusions

 a. Identify relevant data sources and their quality (B)

 b. Collect data from relevant sources (I)

 c. Design feasible data-collection procedures (I)

 d. Explain how context shapes conclusions drawn from data (A)

2. Evaluate research strategies and methods to engage problems

 a. Identify available research strategies and methods (B)

 b. Explain how strategies and methods may be used constructively and destructively in real-world applications (B, I)

 c. Provide empirical examples of constructive and destructive applications of methods (I)

 d. Assess the strengths and limitations of available research strategies and methods (I, A)

3. Apply strategies and methods

 a. Visualize patterns through mapping, graphing, or using GIS techniques (B)

 b. Identify sources of uncertainty or partial knowledges (B, I)

 c. Analyze how errors propagate through data processing (I)

 d. Examine the impacts of sources of uncertainty or partial knowledges on the reliability of data (I)

 e. Apply interactive and dynamic visualization techniques (I, A)

 f. Analyze patterns using appropriate methods (I, A)

 g. Apply strategies to mitigate or constructively engage the effects of uncertainty or partial knowledges (A)

 h. Interpret data and results using appropriate methods (A)

**Goal C: Communication and Engagement**

The successful student will be able to share and receive knowledge by engaging with diverse audiences, participants, and stakeholders.

**ELOs**:

1. Disseminate knowledges

 a. Identify modes by which knowledges can be disseminated (B)

 b. Recognize that different audiences will have different degrees of familiarity with subject being presented (B)

 c. Summarize an author’s argument in their own words (B)

 d. Deliver oral presentations (B)

 e. Adjust the language and technical level of oral or written presentation relative to different audiences (B, I)

 f. Evaluate the standard modes of dissemination of knowledges for their strengths and weaknesses in a given context (I)

 g. Use visual methods to enhance oral or written presentation (B, I)

 h. Construct other output or products using diverse media, art, activism, or other strategies to convey messages from academic research (I)

 i. Synthesize material from several sources (I)

 j. Generate a document that develops an argument drawing from multiple sources (A)

2. Collaborate in learning and research

 a. Demonstrate responsiveness to others (B)

 b. Demonstrate ability to work with a division of labor in a collaborative project (B, I)

 c. Demonstrate ability to work with people of varying cultures, backgrounds, abilities, ideas, ideals, and status (B, I)

 d. Employ teamwork to achieve results (B, I, A)

**Goal D: Critical Thinking and Ethical Engagement**

The successful student is intellectually curious, interested in scrutinizing their assumptions, and is aware of the ethical dimensions of their professional activity regarding real-world problems to work towards justice.

**ELOs**:

1. Critically engage real-world problems

 a. Identify multiple sides of a problem (B)

 b. Explain multiple sides of a problem (I)

 c. Explain the real-world consequences of different positions regarding a problem (A)

 d. Develop a position based on an understanding of multiple sides of a problem (A) e. Identify linkages among apparently discrete problems (A)

2. Appraise ethical issues in research

 a. Explain how strategies and methods may be used constructively and destructively in real-world applications (B, I) [identical to B.2.b]

 b. Perceive that everyone, including researchers, implicitly have biases and partial knowledges that can have negative effects on subjects under study (B, I)

 c. Perceive that subjects under study and those encountered in the field, their values, and their privacy require respect (B, I)

 d. Analyze their positionality regarding, for example, class, race/ethnicity, gender, age, citizenship, occupation, and the like relative those under study or encountered in the field (I, A)

 e. Integrate ethical considerations into formulation of questions and applications of their knowledges (S)

**Goal E: Professional Development**

The successful student understands how to make use of the skills and knowledges developed in their undergraduate program towards securing a job and pursuing a career.

**ELOs**:

1. Make use of their values to guide their careers

 a. Identify their value systems relative to career opportunities (B)

 b. Describe tensions between their ideals and career realities (I)

 c. Appraise the variety of options and trade-offs in career paths relative to their value systems (A)

2. Deploy their skills relative to a changing job market

 a. Identify the range of their skills relative to a variety of career paths (B)

 b. Identify the strengths and limitations of their range of skills relative to various professional opportunities (I)

 c. Demonstrate the ability to learn new skills (A)

3. Creatively use skills to solve problems beyond those encountered in formal training

 a. Apply knowledge from formal training to examine a problem (B)

 b. Integrate diverse skills from formal training (I)

 c. Integrate knowledges from formal training with those acquired independently (A)