

**INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS
OCTOBER 21, 2020**

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SUBJECT

Board Policy III.N., General Education – First Reading

REFERENCE

June 1996	The Board adopted a common course listing for general education core.
December 2016	The Board approved the first reading of Board Policy III.N. clarifying oral communication competencies.
February 2017	The Board approved the second reading of Board Policy III.N.
August 2017	The Board approved the first reading of Board Policy III.N. amending the makeup of the committee and setting a timeline for competency review.
October 2017	The Board approved the second reading of Board Policy III.N.
August 2018	The Board approved the first reading of proposed amendments to Board Policy III.N. establishing a common course indexing system within the General Education Matriculation (GEM) framework to assist with transfer.
October 2018	The Board approved the second reading of proposed amendments to Board Policy III.N. establishing the common course index system within the General Education Matriculation framework.
August 2019	The Board approved the first reading of proposed amendments to Board Policy III.N. clarifying process for changes to common course index.
October 2019	The Board approved the second reading of proposed amendments to Board Policy III.N. clarifying process for changes to common course index.

APPLICABLE STATUTES, RULE OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.N., General Education

BACKGROUND/DISCUSSION

The policy currently designates the Chief Academic Officer of the State Board of Education as the chair of the Statewide General Education Matriculation (GEM) Committee. The proposed amendments designate the Executive Director of the Board, or his/her designee, as the chair of the GEM Committee. In addition, the proposed amendments clarify that institutions shall make course transfer information accessible and transparent on their own websites. Amendments also provide minor technical corrections throughout the document.

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IMPACT

It is standard practice throughout Board policy to define the Executive Director or their designee as the primary board functionary. Approval of the amendments will align the policy with this standard practice and provide greater flexibility and effectiveness in administration of general education work throughout the state. The amendments will also improve the readability and accuracy of the policy as well as make the policy more generally applicable to current practices in maintaining and advising course transfer articulations statewide.

ATTACHMENTS

Attachment 1 – Board Policy III.N., General Education – First Reading

STAFF COMMENTS AND RECOMMENDATIONS

The Council on Academic Affairs and Programs reviewed the proposed amendments on October 1, 2020. The Instruction, Research, and Student Affairs Committee reviewed the proposed amendments on October 8, 2020.

Board staff recommends approval.

BOARD ACTION

I move to approve the first reading of proposed amendments to Board Policy III.N., Statewide General Education, as submitted in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Idaho State Board of Education
GOVERNING POLICIES AND PROCEDURES

SECTION: III. POSTSECONDARY AFFAIRS

SUBSECTION: N. Statewide General Education

~~October 2019~~December 2020

In our rapidly-changing world, students need to understand how knowledge is generated and created. They need to adapt to new ~~knowledge and~~ opportunities as they arise, as well as effectively communicate and collaborate with increasingly diverse communities and ways of knowing. In combination with ~~a student's major~~ coursework, general education curriculum prepares students to use multiple strategies in an integrative manner, to explore, critically analyze, and creatively address real-world issues and challenges. General education course-work provides ~~graduates~~ students with an understanding of self, the physical world, ~~and the development and functioning of~~ human society, ~~and~~ its cultural and artistic endeavors, as well as an understanding of the methodologies, value systems, and thought processes employed in human inquiries. General education helps instill students with the personal and civic responsibilities of good citizenship. ~~General education, and~~ prepares ~~graduates as~~ them to be adaptive, life-long learners.

This ~~subsection policy~~ shall apply to the University of Idaho, Boise State University, Idaho State University, Lewis-Clark State College, College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, and North Idaho College (hereinafter "institutions").

1. The state of Idaho's general education framework for Associate of Arts, Associate of Science, and Baccalaureate degrees, outlined below in Figure 1, shall be:

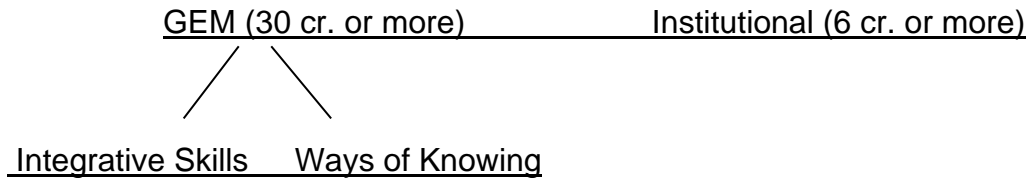
~~The general education curricula must be thirty-six (36) credits or more.~~

- a. Thirty (30) credits or more of the general education curricula must fit within the general education Matriculation (GEM) competency areas defined in subsection 4 of this policy, and
- b. Six (6) or more credits of the general education curricula, which are reserved for institutions to address the specific mission and goals of the institution. For this purpose, institutions may create new competency areas or they may choose to count additional credits from GEM competencies. Regardless, these institutionally designated credits must have learning outcomes linked to Association of American Colleges and Universities (AAC&U) Essential Learning Outcomes.

Fig. 1: General education framework reflecting AAC&U Essential Learning Outcomes

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2. The intent of the general education framework is to:
 - a. Establish statewide competencies that guide institutions' determination of courses that will be designated as GEM courses;
 - b. Establish shared rubrics that guide course/general education program assessment; and
 - c. Create a transparent and seamless transfer experience for undergraduate students.
3. There are six (6) GEM competency areas. The first two (2) emphasize integrative skills intended to inform the learning process throughout general education and major. The final four (4) represent ways of knowing and are intended to expose students to ideas and engage them in a broad range of active learning experiences. ~~Those~~ The GEM competency areas are as listed:
 - a. Written Communication
 - b. Oral Communication
 - c. Mathematical Ways of Knowing
 - d. Scientific Ways of Knowing
 - e. Humanistic and Artistic Ways of Knowing
 - f. Social and Behavioral Ways of Knowing
4. GEM courses in each area shall include the following competencies:
 - a. Written Communication:
 - ~~a.~~ Upon completion of a course in this category, students are able to demonstrate the following competencies:
 - i. Use flexible writing process strategies to generate, develop, revise, edit, and proofread texts.
 - ii. Adopt strategies and genre appropriate to the rhetorical situation.
 - iii. Use inquiry-based strategies to conduct research that explores multiple and diverse ideas and perspectives, appropriate to the rhetorical context.

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- iv. Use rhetorically appropriate strategies to evaluate, represent, and respond to the ideas and research of others.
- v. Address readers' biases and assumptions with well-developed evidence-based reasoning.
- vi. Use appropriate conventions for integrating, citing, and documenting source material as well as for surface-level language and style.
- vii. Read, interpret, and communicate key concepts in writing and rhetoric.

b. Oral Communication:

b. Upon completion of a course in this category, students are able to demonstrate the following competencies:

- i. Research, discover, and develop information resources and structure spoken messages to increase knowledge and understanding.
- ii. Research, discover, and develop evidence-based reasoning and persuasive appeals for ethically influencing attitudes, values, beliefs, or behaviors.
- iii. Adapt spoken messages to the diverse personal, ideological, and emotional needs of individuals, groups, or contexts.
- iv. Employ effective spoken and nonverbal behaviors that support communication goals and illustrate self-efficacy.
- v. Listen in order to effectively and critically evaluate the reasoning, evidence, and communication strategies of self and others.
- vi. Understand key theories, perspectives, principles, and concepts in the Communication discipline, as applied to oral communication.

c. Mathematical Ways of Knowing:

c. Upon completion of a course in this category, a student is able to demonstrate the following competencies:

- i. Read, interpret, and communicate mathematical concepts.
- ii. Represent and interpret information/data.
- iii. Select, execute and explain appropriate strategies/procedures when solving mathematical problems.
- iv. Apply quantitative reasoning to draw and support appropriate conclusions.

d. Scientific Ways of Knowing:

d. Upon completion of a course in this category, a student is able to demonstrate at least four (4) of the following competencies:

- i. Apply foundational knowledge and models of a natural or physical science to analyze and/or predict phenomena.
- ii. Understand the scientific method and apply scientific reasoning to critically evaluate arguments.
- iii. Interpret and communicate scientific information via written, spoken and/or visual representations.

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- iv. Describe the relevance of specific scientific principles to the human experience.
- v. Form and test a hypothesis in the laboratory or field using discipline-specific tools and techniques for data collection and/or analysis.

e. Humanistic and Artistic Ways of Knowing:

e. Upon completion of a course in this category, students are able to demonstrate at least five (5) of the following competencies:

- i. Recognize and describe humanistic, historical, or artistic works within problems and patterns of the human experience.
- ii. Distinguish and apply terminologies, methodologies, processes, epistemologies, and traditions specific to the discipline(s).
- iii. Perceive and understand formal, conceptual, and technical elements specific to the discipline.
- iv. Analyze, evaluate, and interpret texts, objects, events, or ideas in their cultural, intellectual or historical contexts.
- v. Interpret artistic and/or humanistic works through the creation of art or performance.
- vi. Develop critical perspectives or arguments about the subject matter, grounded in evidence-based analysis.
- vii. Demonstrate self-reflection, intellectual elasticity, widened perspective, and respect for diverse viewpoints.

f. Social and Behavioral Ways of Knowing:

f. Upon completion of a course in this category, students are able to demonstrate at least four (4) of the following competencies.

- i. Demonstrate knowledge of the theoretical and conceptual frameworks of a particular Social Science discipline.
- ii. Develop an understanding of self and the world by examining the dynamic interaction of individuals, groups, and societies as they shape and are shaped by history, culture, institutions, and ideas.
- iii. Utilize Social Science approaches, such as research methods, inquiry, or problem-solving, to examine the variety of perspectives about human experiences.
- iv. Evaluate how reasoning, history, or culture informs and guides individual, civic, or global decisions.
- v. Understand and appreciate similarities and differences among and between individuals, cultures, or societies across space and time.

5. General eEducation Requirements

- a. This subsection applies to Associate of Arts, Associate of Science, and Baccalaureate degrees. For the purpose of this policy, disciplines are indicated

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by course prefixes.

General education curricula must reflect the following credit distribution:

Competency Area	Minimum Credits
Written Communication	6
Oral Communication	2
Mathematical Ways of Knowing	3
Scientific Ways of Knowing	7 (from two different disciplines with at least one laboratory or field experience)
Humanistic and Artistic Ways of Knowing	6 (from two different disciplines)
Social and Behavioral Ways of Knowing	6 (from two different disciplines)
Institutionally-Designated Credits	6

- i. GEM courses are designed to be broadly accessible to students regardless of major, thus college-level and non-GEM pre-requisites to GEM courses should be avoided unless deemed necessary by the institution.
 - ii. Additional GEM courses, beyond the general education curricula, may be required within the major for degree completion.
- b. This subsection pertains to Associate of Applied Science (AAS) degrees.
- i. The general education curricula for the AAS degree must contain a minimum of fifteen (15) credits, so distributed in the following areas:

Competency Area	Minimum Credits
Written Communication	3
Oral Communication	3
Mathematical Ways of Knowing	3
Social and Behavioral Ways of Knowing	3
Any general education course including institutionally designated courses	3

- c. GEM courses and institutionally designated courses shall transfer as meeting an associated general education competency requirement at any institution pursuant to Board policy Section III.V.

6. Governance of the General Education Program and Review of Courses

- a. GEM courses are developed by faculty and approved via the curriculum approval process of the institution delivering the courses. Faculty discipline groups representing all institutions shall meet at least annually or as directed by the

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Board, to ensure consistency and relevance of general education competencies and courses approved for their respective GEM competency areas.

- b. Common Course Indexing is developed for courses offered within the GEM framework to provide greater transparency and seamlessness within transfer processes at Idaho's postsecondary institutions. ~~-Common--~~indexed courses are accepted as direct equivalents across institutions for transfer purposes. ~~-Common~~ course indexing shall include common course prefix, common course number, common course title, and common GEM discipline area designation. ~~-The common~~ course number shall be three digits in sequence, but can be preceded by a single digit if four numbers are utilized by the institution (x####).

The common course list shall be approved by the Board on an annual basis and shall be maintained by the Board office. Changes to the list may be proposed by faculty discipline groups to the General Education Matriculation Committee. Proposed additions or removal of courses on the common course list must be reviewed by the General Education Matriculation Committee prior to Board approval. The request to remove a common-indexed course from an institution's academic catalog must be approved by the Board. ~~-~~ The request to discontinue a course must be submitted in writing by the institution to the Board office. ~~-The~~ request shall be submitted no less than a year in advance and provide rationale for the inability to offer the course.

- c. The General Education Matriculation ~~Committee~~ (GEM) ~~Committee~~: ~~The GEM Committee,~~ shall consist of a Board-appointed representative from each of the institutions ~~appointed by the Board~~; ~~a~~ representative from the Division of Career Technical Education; ~~as an ex-officio member, as well as~~ a representative from the Idaho Registrars Council, ~~as an ex-officio member~~; and the Executive Director of the Board, Office of the State Board of Education or designee ~~Chief Academic Officer~~, who shall serve as the chair ~~to of~~ the committee. To ensure alignment with AAC&U Essential Learning Outcomes and subsection 1, the Committee shall meet at least annually to review the competencies and rubrics of the general education framework. The Committee shall make recommendations to the Board regarding the general education framework and the common course list. The Committee shall review and make recommendations on the general education competencies as necessary. GEM Committee duties are prescribed by the Board, including those that may involve addressing issues related to competency areas and course offerings. ~~-The~~ GEM Committee reports to the Council on Academic Affairs and Programs.
- d. The institutions shall identify all general education courses in their curricula and identify them ~~on the state transfer web portal~~ the in a manner that is easily accessible by the public via their respective websites, as well as relevant web resources maintained by the Board office.

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SUBJECT

Board Policy III.S. Remedial Education – First Reading

REFERENCE

June 2012	The Board approved the Complete College Idaho Plan.
April 2015	The Board approved the first reading of changes to Board Policy III.S. A major change to this policy is the incorporation of the three Board approved remediation models.
June 2015	The Board approved the second reading of changes to Board Policy III.S. These changes updated definitions and incorporated the three (3) Board approved forms of remedial education: Accelerated Model, Corequisite Model, Emporium Model.
September 2017	The Board adopted the Governor's Higher Education Task Force recommendations, which includes corequisite support strategies for remedial instruction.
December 2017	The Board approved the first reading of changes to Board Policy III.S. Board adopts the Governor's Higher Education Task Force recommendations, which includes Complete College America 'Game Changer' strategies.
February 2018	The Board approved the second reading of changes to Board Policy III.S. Proposed amendments updated the policy to better align with changes identified by Complete College America to help with implementation and student support.
August 2019	The Board approved the first reading of changes to Board Policy III.S.
October 2019	The Board approved the second reading of changes to Board Policy III.S.

APPLICABLE STATUTES, RULE OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.S.

BACKGROUND/DISCUSSION

Proposed policy amendments restructure the policy for enhanced readability and improved interpretation. Amendments update several definitions, remove the definition of "College Level Course," and provide an expanded definition for "Student Readiness."

In response to the pandemic, amendments also adjust the date of discontinuance of the requirement of remedial courses and other prerequisite courses for students needing additional support by one year, from the beginning of the 2021-22 academic year to the beginning of the 2022-23 academic year. The amendments allow institutions to require students in need of additional support to complete a credit-bearing general education prerequisite course before enrolling in MATHx143 (College Algebra). Amendments keep intact the restriction on requiring students in need of additional support to complete a remedial course before being

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allowed to enroll in MATHx123, MATHx143, MATHx153, as well as ENGL x101.

The amendments clarify that all students, regardless of readiness level, shall have the opportunity to complete their gateway mathematics and English courses within their first academic year. *Academically prepared* students shall be encouraged to complete their gateway courses within their first semester. The amendments also require institutions to make *academically unprepared* students aware of eligibility options for enrolling in gateway courses with corequisite support and to provide counseling to these students based on their individual circumstances.

IMPACT

These amendments will clarify for institutions the various levels of student readiness and allow them to better and more flexibly provide students at these various levels with options to ensure their long-term college success. It will also promote continued implementation of Complete College America Momentum Pathways strategies, while also being responsive to the difficulties and realities posed by the pandemic. For example, Idaho State University has had to delay piloting its corequisite support model in math this fall, delaying the implementation timeline by a full year. At the same time, Boise State University is currently supporting students on the College Algebra pathway with an intermediate general education gateway course, MATH x133. This approach is an adaptation of the corequisite model and has proven effective. The amendments do not change current reporting requirements, whereby institutions are required to report success rates in corequisite support models and remedial courses annually to the Board.

ATTACHMENTS

Attachment 1 – Board Policy III.S., Remedial Education – First Reading

STAFF COMMENTS AND RECOMMENDATIONS

Approval of these amendments will clarify a complicated Board policy and keep the policy in alignment with what the Board intended for its vision of the delivery of postsecondary remedial education, with the adoption of the Complete College Idaho Plan. These amendments are also consistent with the Board's adoption of the updated Complete College America strategies concerning remedial instruction and clear math pathways. Proposed amendments will facilitate full implementation of corequisite delivery of instruction in alignment with the Governor's Higher Education Task Force (2017) recommendation to scale corequisite remediation. Most importantly, amendments will help ensure that more students are provided with access to courses that not only have higher success rates but also count toward degree progress. However, the amendments still allow for some students to enroll in remedial courses and gateway course prerequisites when appropriate, as determined by each institution's placement process.

These policy amendments were developed with input from math faculty, especially general education math faculty, from all eight institutions. The Council on Academic Affairs and Programs reviewed the proposed amendments on October

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1, 2020. The Instruction, Research, and Student Affairs committee reviewed the proposed amendments on October 8, 2020.

Board staff recommends approval.

BOARD ACTION

I move to approve the first reading of proposed amendments to Board Policy III.S., Remedial Education, as submitted in Attachment 1.

Moved by _____ Seconded by _____ Carried Yes _____ No _____

Idaho State Board of Education

GOVERNING POLICIES AND PROCEDURES

SECTION: III. POSTSECONDARY AFFAIRS

SUBSECTION: S. Remedial Education

~~October 2019~~ December 2020

1. Coverage

This subsection shall apply to the University of Idaho, Idaho State University, Boise State University, Lewis-Clark State College, College of Eastern Idaho, College of Southern Idaho, College of Western Idaho, and North Idaho College.

2. Definitions

~~a. College Level Course means an academic course that meets Mathematics and English credit hour requirements for an undergraduate degree program.~~

~~b.a.~~ Co-requisite Course Model means a delivery model whereby remedial instruction is delivered as a separate course or lab simultaneously with college level content as a separate course or lab as part of a co-requisite support program a gateway course.

~~c.b.~~ Co-requisite Support means academic courses or content that supplements the content of gateway mathematics and English courses during the same academic term to increase the success rates for students in need of additional support. Board-approved approaches of co-requisite support include the Co-requisite Course Model, the Embedded Model, and the Emporium Model.

~~d.c.~~ Embedded Model means a combined delivery model approach whereby remedial content is delivered as a part of the content delivered through of a gateway courses.

~~e.d.~~ Emporium Model means a delivery model whereby remedial support is delivered in a computer lab setting where students receive individualized instruction from faculty and engagement with technology-based programs.

~~f.e.~~ Gateway course means the first postsecondary mathematics or English course that a student takes that fulfills the mathematics or English requirement for the student's program of study. Gateway courses shall fulfill general education requirements in Board Policy III.N. Mathematics gateway courses are: an entry-level course in a general education program of study or curriculum pathway. There may be programs that consist of specific gateway courses that are not identified in Board Policy.

g.f. Remedial Courses means a courses that are where credits earned may not apply toward the general education requirements for a certificate or degree, and which may have one or more of the following characteristics:

- i. dDesigned for students in need of additional support who are academically unprepared to succeed in gateway courses in mathematics or English and
- ii. Required to be completed before an academically unprepared student may enroll in the gateway course for that subject. Remedial Courses may take the following forms:
- iii. courses nNumbered below 100,
- iv. which sServe as a duplication of secondary curriculum,
- ii.v. or coursesInclude content and support services in basic academic skills, including Adult Basic Education, to prepare academically unprepared students for college level content and are a pre-requisite to enrolling in the college-level mathematics and English course.

g. Student Readiness means a determination about student preparedness for college-level mathematics and English, and includes the following three levels:

- i. Academically Prepared Students are students who have been identified by an institution's placement process as prepared to successfully take gateway mathematics or English courses without additional academic content or interventions.
- ii. Students in Need of Additional Support means are students who have been identified by the an institution's placement process as underprepared to take gateway mathematics and/or English courses without additional academic content or interventions.
- ii.iii. Academically Unprepared Students are students who have been identified by an institution's placement process as unprepared to successfully take gateway mathematics or English courses without first completing additional academic content or interventions.

3. This policy applies to the following common-numbered gateway courses: MATH x123 Math in Modern Society; MATH x143 College Algebra; and MATH x153 Statistical Reasoning, and The gateway course for English is ENGL x101 Writing and Rhetoric I, or equivalent courses. The State Board of Education has approved the Co-requisite Course Model, Embedded Model, and Emporium Model as the methods for serving students in need of additional support in mathematics and English general education.

Students enrolling into Co-requisite Support shall be provided with the option to do so in one of the defined models.

i. ~~a.~~ Institutions may ~~also~~ pilot the use of ~~additional~~ alternative delivery models, provided the models are evidence based; evidence need not be Idaho specific. Institutions choosing to exercise this pilot option shall notify both the Council on Academic Affairs and Programs and the Instruction, Research, and Student Affairs Committee of:

~~a.~~ their intent to pilot a new delivery model; and

ii. ~~b.~~ the results of said pilot.

Piloted models must be assessed annually and may be continued and scaled beyond the first year if the pilot achieves equal or greater success rates in students completing gateway mathematics and English courses as compared to rates achieved in approved Co-requisite Support models.

3.4. Each institution shall maintain a mechanism for ~~diagnostic testing~~ assessing and evaluating student preparedness in mathematics and English language arts ~~and mathematics~~, and provide ~~corrective measures~~ support and interventions for students identified as needing additional supports or as academically unprepared.

5. All students, regardless of readiness level, shall have the opportunity to complete their gateway mathematics and English courses within their first academic year.

a. Academically prepared students shall be encouraged to complete their gateway mathematics and English courses within their first academic semester.

b. ~~Effective Fall 2021~~2, ~~completion of a non-gateway course~~ students in need of additional support shall not be required ~~for enrollment in to complete a remedial course prior to enrollment in the following~~ gateway courses: MATHx123, MATHx143, MATHx153, and ENGL x101. Such students shall be encouraged to enroll directly in a corequisite course, except for students in the MATHx143 pathway, who may be encouraged to enroll in a corequisite course OR be required to complete a non-remedial prerequisite general education math course prior to enrollment in MATHx143.

i. Students who completinge a co-requisite gateway course shall not be required to take a placement exam for enrollment in a subsequent course.

ii. Co-requisite gateway courses will not exceed five semester credits nor ~~These courses shall not~~ be made available for dual credit purposes.

- iii. Success rates in co-requisite support models, including co-requisite gateway courses, and remedial courses shall be reported annually to the Board.

c. Academically unprepared Sstudents ~~determined to be in need of instruction at the level equivalent to that offered through Adult Basic Education programs~~ may be required to enroll in a remedial course. The remedial sequence required of these students shall be designed to ensure the student has the opportunity to enroll in the gateway course within the first academic year.

- ~~iv.i.~~ -Student enrollment in a remedial course must be identified by the institution and approved through established institutional processes.

- ii. Students enrolled in a remedial course who qualify for a co-requisite gateway course must be made aware of their eligibility options, and counseled on the best option for their individualized circumstances.

- ~~v.iii.~~ Courses that are not college level Remedial courses may be made available to high school students and postsecondary students who elect to enroll with the understanding the course is not required for gateway course enrollment.

- ~~vi.iv.~~ Credits earned in remedial courses may not apply toward the requirements for a certificate or degree.

- ~~vii.v.~~ Success rates in remedial courses shall be reported annually to the Board.

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SUBJECT

Experimental Program to Stimulate Competitive Research (EPSCoR) - Annual Report

REFERENCE

August 2016	EPSCoR provided their annual report to the Board
October 2017	EPSCoR provided their annual report to the Board
October 2018	EPSCoR provided their annual report to the Board
October 2019	EPSCoR provided their annual report to the Board

APPLICABLE STATUTE, RULE, OR POLICY

Idaho State Board of Education Governing Policies & Procedures, Section III.W.
Higher Education Research

BACKGROUND/DISCUSSION

The Experimental Program to Stimulate Competitive Research (EPSCoR) is a federal-state partnership designed to enhance the science and engineering research, education, and technology capabilities of states that traditionally have received smaller amounts of federal research and development funds. Through EPSCoR, participating states are building a high-quality academic research base that is serving as a backbone of a scientific and technological enterprise.

Idaho EPSCoR is led by a state committee composed of 16 members, appointed by the Board, with diverse professional backgrounds from both the public and private sectors and from all regions in the state. The Idaho EPSCoR committee oversees the implementation of the Idaho EPSCoR program and ensures program goals and objectives are met. The Idaho EPSCoR office and the Idaho EPSCoR Project Director are located at the University of Idaho. Partner institutions are Boise State University and Idaho State University.

The purpose of EPSCoR awards is to provide support for lasting improvements in a state's academic research infrastructure and its research and education capacity in areas that support state and university Science and Technology Strategic Plans. Idaho EPSCoR activities include involvement in K-12 teacher preparation and research initiatives and projects ranging from undergraduate research through major state and regional research projects.

Idaho currently has ten active National Science Foundation (NSF) EPSCoR Research Infrastructure Improvement (RII) awards:

- Track-1 2018-2023 - \$20 million plus required 20% state match: Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes. The state match is funded through the Board's Higher Education Research Council matching grant funds. The current match is \$800,000 annually.

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- Track-2 Focused EPSCoR Collaborations:
 - 2017-2021 - \$6 million, Using Biophysical Protein Models to Map Genetic Variation to Phenotypes
 - 2018-2022 - \$6 million, Genomics Underlying Toxin Tolerance (GUTT): Identifying Molecular Innovations that Predict Phenotypes of Toxin Tolerance in Wild Vertebrate Herbivores
 - 2018-2022 - \$6 million, A Multiscale, Multiphysics Modeling Framework for Genome-to-Phenome Mapping via Intermediate Phenotypes
 - 2020-2024 - \$6 million, Leveraging Big Data to Improve Prediction of Tick-Borne Disease Patterns and Dynamics
- Track-4 EPSCoR Research Fellows:
 - 2018-2020 - \$216,000, A Multi-omic Approach Toward an Understanding of the Environmental Implications of Antibiotics on Soil Processes, Michael Strickland, University of Idaho
 - 2017-2021 - \$194,000, Using In-cell NMR to Follow ¹³C-fluxomics in Living Cells, Lisa Warner, Boise State University
 - 2017-2021 - \$131,000, Investigating Evolutionary Innovations through Metagenomics, Boise State University
 - 2019-2021 - \$213,571, Mechanical Regulation of Intra-Nuclear Mechanics and Gene Transcription, Boise State University
 - 2019-2020 - \$152,050, Optimizing the Chemistry of Heterointerfaces in Photovoltaics: A Combination of Electronic Structure Calculations and Machine Learning Approach, University of Idaho

Consistent with Board Policy III.W.2. d., EPSCoR has prepared an annual report regarding current EPSCoR activities that details all projects by federal agency source, including reports of project progress from the associated external Project Advisory Board (PAB).

ATTACHMENTS

Attachment 1 – Annual Report Presentation

Attachment 2 – Project Advisory Board Report

STAFF COMMENTS AND RECOMMENDATIONS

Idaho EPSCoR was awarded a Track-1 grant NSF-EPSCoR award in 2018, entitled “Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes,” for \$20 million. Track-1 awards provide up to \$20 million over 5 years to support improvements to physical and cyber infrastructure and to develop human capital in research areas. There is a required state matching component. The \$800,000 annual match is provided through the Board’s Higher Education Research Council as well as the funds the Board has allocated to the Council for distribution.

A full presentation and discussion of the EPSCoR Annual Report was provided to the Instruction, Research, and Student Affairs Committee on October 8, 2020.

BOARD ACTION

This item is for informational purposes only.

Idaho Established Program to Stimulate Competitive Research (EPSCoR): *Annual Report - 2020*

Laird Noh, Idaho EPSCoR Committee Chairman
Andrew Kliskey, Project Director
Rick Schumaker, Assistant Project Director

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2020 Annual Report

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- NSF RII Track-1 "GEM3"
- Success Stories
- Concluding Remarks

www.idahoepscor.org

The screenshot shows the homepage of the Idaho EPSCoR website. At the top is a dark navigation bar with the Idaho EPSCoR logo on the left and links for Home, About, Research, Education and Outreach, Resources, and a search icon on the right. Below the navigation bar is a large banner for the GEM3 (Genes by Environment: Modeling Mechanisms and Mapping) project, featuring two researchers in a field and a surveying instrument. The banner includes the text 'NEW IDAHO EPSCoR AWARD' and a 'more' link. Below the banner is a 'Welcome to Idaho EPSCoR' section with a paragraph about the organization's mission. To the right of the welcome section are three featured articles: 'Disappearing Farm Land' (with a thumbnail of a landscape), 'Current Idaho EPSCoR Research' (with a thumbnail of a fish), and 'Center for Ecological Research and Education' (with a thumbnail of two researchers). Each article has a brief description and a 'more' link. On the far right is a sidebar with 'Announcements' (listing awards like the ISU Grad Editor's Choice Award and the 2018 Shreeve Award), a 'Subscribe' section for Idaho INBRE/EPSCoR E-News, and 'The Researcher' newsletter section. The bottom of the page features logos for the Idaho EPSCoR, University of Idaho, Idaho State University, and Boise State University.



Federal Funding for All Eligible States

*Dollars in Millions.
Source:
EPSCoR/IDeA Fall
Newsletter 2019*

Agency	FY16 Enacted	FY17 Enacted	FY18 Enacted	FY19 Enacted	FY20 Enacted
NSF	\$160.0	\$160.0	\$170.7	\$175.6	\$190.0
NIH	\$320.8	\$333.4	\$351.0	\$361.6	\$386.6
DOE	\$15.0	\$15.0	20.0	\$20.0	\$25.0
USDA	\$52.5*	\$56.25*	\$60.0*	\$62.3*	\$63.8*
NASA	\$18.0	\$18.0	\$18.0	\$21.0	\$24.0
DOD	-	-	\$0	\$12.0	\$12.0
Total	\$566.3	\$582.65	\$619.7	\$652.5	\$701.4



Awards to Idaho

- ✓ RII Track-1, Track-2, Track
- ✓ INBRE, COBRE
- ✓ Infrastructure
- ✓ Multiple awards
- ✓ Research, Core



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NSF	Track-1: Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes	2018-23	U of I (w/ Boise State, Idaho State)	\$20,000,000
NSF	Track-2: Leveraging Big Data to Improve Prediction of Tick-Borne Disease Patterns and Dynamics	2020-24	U of I, NV, NH	\$6,000,000
NSF	Track-2: Genomics Underlying Toxin Tolerance (GUTT): Identifying Molecular Innovations that Predict Phenotypes of Toxin Tolerance in Wild Vertebrate Herbivores	2018-22	Boise State (w/ NV, WY)	\$6,000,000
NSF	Track-2: Using Biophysical Protein Models to Map Genetic Variation to Phenotypes	2017-21	U of I (w/ VT, RI)	\$6,000,000
NSF	Track-2: A Multiscale, Multiphysics Modeling Framework for Genome-to-Phenome Mapping via Intermediate Phenotypes	2018-22	KY, SC (w/ U of I)	\$6,000,000



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NSF	Track-4: Investigating Evolutionary Innovations through Metagenomics	2017-21	Boise State	\$131,000
NSF	Track-4: Using in-cell NMR to follow ¹³ C-fluxomics in living cells	2017-21	Boise State	\$194,000
NSF	Track-4: A Multi-omic Approach Towards an Understanding of the Environmental Implications of Antibiotics on Soil Processes	2018-20	U of I	\$216,000
NSF	Track-4: Mechanical Regulation of Intra-Nuclear Mechanics and Gene Transcription	2019-21	Boise State	\$213,571
NSF	Track-4: Optimizing the Chemistry of Heterointerfaces in Photovoltaics: A Combination of Electronic Structure Calculations and Machine Learning Approach	2019-21	U of I	\$152,050



Active EPSCoR/IDeA Awards in Idaho

Agency	Title	Years	Institution(s)	Award Amount
NIH	Idaho INBRE	2019-24	U of I	\$17,664,267
NIH	COBRE: Matrix Biology	2014-24	Boise State	\$20,815,235
NIH	COBRE: Center for Modeling Complex Interactions	2015-25	U of I	\$21,600,000
NIH	COBRE: Emerging and Re-emerging Infectious Disease	2016-21	IVREF	\$10,000,000
DOE	DNA-Controlled Dye Aggregation: A Path to Create Quantum Entanglement	2019-21	Boise State	\$3,000,000
DOE	Understanding Interfacial Chemistry and Cation Order-Disorder in Mixed-Phased Complex Sodium Metal Oxide Cathodes for Sodium Ion Batteries	2018-21	Boise State	\$750,000
NASA RID	Research Infrastructure Development 2019-2022	2019-22	U of I	\$450,000
NASA Research	Space-Grade Flexible Hybrid Electronics	2017-21	Boise State	\$748,090
NASA Research	Plasma-Jet Printing Technology for In-Space Manufacturing and In-Situ Resource Utilization	2019-22	Boise State	\$749,841
NASA Research	Cryoldaho: Building Idaho's Cryosphere Research Community through Analysis of Terrain Effects on Snow and Ice Meltwater Fluxes	2021-23	Boise State	\$750,000
USDA	10 of 11 AFRI awards in FY17*	Various	U of I, Boise State, Idaho State	\$2,067,697



Idaho's Research Competitiveness

Idaho's NSF funding (\$M)



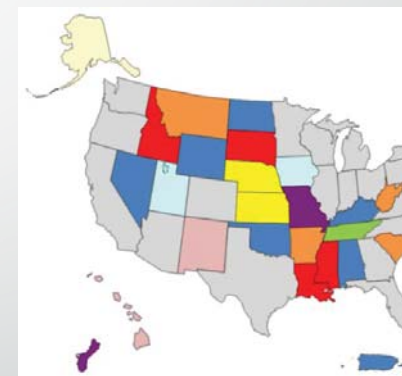
Idaho's share of total NSF
Research funding up over
the last 8 years:

0.27%

Total NSF funding to Idaho

(FY19) = \$30.8M,

64% increase from 2012



**INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS
OCTOBER 21, 2020**

ATTACHMENT 1

State	FY15 Total	FY16 Total	FY17 Total	FY18 Total	FY19 Total	FY 2015-19 Total	EPSCoR Total	Federal Total	Adjusted \$	% of \$
(Drill to Inst)	Amt \$k	Amt \$k	Amt \$k	Amt \$k	Amt \$k	Amt \$k	Amt \$k		Amt \$k	
Total	\$6,967,463	\$7,110,054	\$7,016,546	\$7,457,851	\$7,734,408	\$36,286,322	\$678,498	\$773,646	\$34,834,178	100
	\$25,489	\$26,715	\$18,894	\$23,354	\$27,131	\$121,583				
Total	\$6,941,974	\$7,083,339	\$6,997,652	\$7,434,497	\$7,707,277	\$36,164,739				
h	\$2,055	\$2,107	\$2,516	-	\$1,210	\$7,888	\$6,000	-	\$1,888	0
h Islands	\$4,570	\$6,666	\$5,109	\$6,304	\$2,922	\$25,571	\$16,171	-	\$9,400	0
ont	\$11,871	\$9,695	\$15,665	\$19,389	\$6,118	\$62,738	\$22,674	-	\$40,064	0
h Dakota	\$18,696	\$11,628	\$14,822	\$15,021	\$20,290	\$80,457	\$29,795	-	\$50,662	0
Virginia	\$14,961	\$14,924	\$14,347	\$15,959	\$15,125	\$75,316	\$22,161	\$688	\$52,467	0
h Dakota	\$14,217	\$21,064	\$13,434	\$16,051	\$8,671	\$73,437	\$17,806	-	\$55,631	0
o Rico	\$8,372	\$15,481	\$10,285	\$19,488	\$19,355	\$72,981	\$13,722	-	\$59,259	0
ning	\$13,813	\$15,879	\$13,344	\$17,068	\$28,525	\$88,629	\$19,886	-	\$68,743	0
sas	\$16,207	\$24,647	\$15,411	\$28,979	\$19,720	\$104,964	\$22,990	-	\$81,974	0
da	\$17,718	\$15,612	\$18,375	\$22,091	\$25,951	\$99,747	\$13,153	-	\$86,594	0
	\$26,162	\$22,984	\$24,701	\$24,745	\$30,765	\$129,357	\$34,811	-	\$94,546	0
	\$26,164	\$17,104	\$22,314	\$33,440	\$25,013	\$124,035	\$27,136	-	\$96,899	0
ssippi	\$22,973	\$32,332	\$20,946	\$21,791	\$24,514	\$122,556	\$25,157	-	\$97,399	0
ana	\$21,626	\$33,826	\$31,780	\$30,567	\$31,487	\$149,286	\$31,431	-	\$117,855	0
ucky	\$31,772	\$31,214	\$30,048	\$32,887	\$32,034	\$157,955	\$27,087	-	\$130,868	0
ware	\$25,593	\$46,120	\$25,204	\$36,652	\$41,135	\$174,704	\$29,792	-	\$144,912	0
homa	\$46,000	\$29,789	\$40,468	\$24,624	\$31,122	\$172,003	\$19,117	\$2,482	\$150,404	0
aska	\$33,386	\$31,725	\$37,926	\$34,167	\$41,761	\$178,965	\$26,156	-	\$152,809	0
Hampshire	\$35,834	\$42,246	\$40,038	\$38,751	\$41,947	\$198,816	\$29,282	\$8,946	\$160,588	0
iana	\$30,614	\$45,598	\$36,916	\$42,513	\$39,207	\$194,848	\$33,172	-	\$161,676	0
as	\$38,966	\$34,560	\$41,596	\$41,173	\$37,956	\$194,251	\$25,627	-	\$168,624	0

Idaho EPSCoR: *Infrastructure Improvement Strategy*



- Statewide collaboration
- Stakeholders as partners
- New faculty positions
- Synergies among university research institutes
- Landscapes as natural laboratories
- Integrated research, education, and workforce development



Idaho Track-1 RII: "GEM₃" *Genes to Environment: Modeling, Mechanisms, and Mapping* - Oct 2018 – Sep 2023

Idaho will lead the nation with thriving, collaborative, and inclusive research to discover and predict how plants, animals, and people interact and adapt to changing environments, resulting in the sustainable management of natural resources.



GEM₃ Summer Authentic Research Experiences (SARE) Alyssa DeSmit (ISU)



Alyssa DeSmit (above) is doing research designed to understand how the interaction between streams drying at their headwaters can influence the water quality downstream.

"The SARE program is meant to provide students with exposure to authentic research experiences where they can get out into the field [or] in labs as well,"

Janet Loxterman, chair of the ISU biological sciences department and a GEM₃ SARE administrator at ISU

"It has been my first real research project. I have loved this opportunity. It has really helped me solidify what I want to do and helped me realize I am on the right path."

Alyssa DeSmit - undergraduate in geosciences (ISU)

GEM₃ Graduate research - Haley Netherton (BSU)

- Undergraduate and graduate VIP student involvement in sagebrush values study
- Developed stakeholder partnerships to increase understanding of public attitudes toward sagebrush ecosystems and management



- Statewide survey
- Local interviews

- Land cover maps
- Management history

Understand preferences

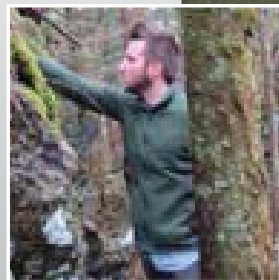
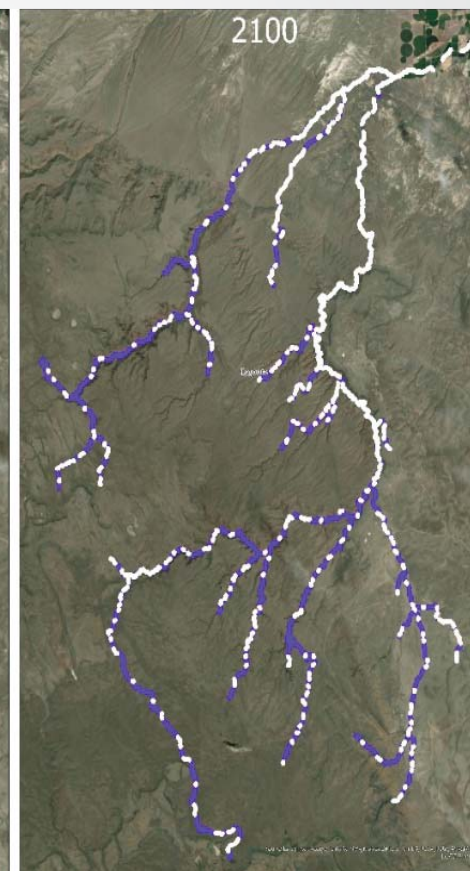
Predict conflict

Make policy recommendations



GEM₃ Postdoctoral research – Dr. Travis Seaborne (UI)

- Simulating hundreds of thousands of individual redband trout on the landscape to better understand locations of streams which might
 - 1) not sustain trout in the future or
 - 2) become isolated populations
- Early models highlight that the persistence of trout depends on local adaptations and the individual movements of fish
- Importance of computational modeling as part of GEM₃'s integrative methods



Increasing Idaho's Capacity – GEM₃ New faculty hires

New Faculty Position	Institution	Name
Ecological Genomics Modeler	BSU	Leonora Bittleston
Environmental Network Systems Scientist	BSU	Matt Williamson
Data Scientist	BSU	Megan Cattau
Quantitative Population Ecologist	BSU	Jen Cruz (Fall 2020)
Genetics Scientist	ISU	Kathryn Turner
Environmental Social Scientist	ISU	Sarah Ebel



New \$441K NSF award: Plant-microbiome dynamics, biogeography, and experimental communities

Ongoing Program Review & Evaluation

- Project Advisory Board (PAB) Review – Dec 2019
- NSF Reverse Site Visit (RSV) – April 2020
- NSF Annual Review – June 2020



PAB Recommendation	Action / Response
Increase interactions among geneticists across institutions and taxa	Eco-Evo Dynamics 3-day Workshop; Online landscape genomics course; 2019 Annual meeting break-out groups
Diversity targets at faculty level ambitious and difficult	WFD Seed support for Tribal Faculty; Leveraging new BSU & UI LSAMP awards
Public messaging to help Idahoans understand GEM3	Public Town Hall Events; Stakeholder Advisory group workshops

Return on Idaho EPSCoR (MILES) Investments

- Asst Prof Rebecca Hale (ISU) 2015 new hire through Idaho EPSCoR Track-1 MILES program
- In 2020 two new NSF awards - addressing our understanding of how streams process organic matter that they receive from terrestrial systems
 - \$200K focused on Gibson Jack Creek
 - \$1.4M focused on urban streams in SLC, Boston, Atlanta, Miami, and Portland



Idaho EPSCoR – Statewide/Regional Awards

- Idaho EPSCoR part of team to receive **NSF INCLUDES** Planning Grant (99K) to develop statewide STEM ecosystem
 - Also includes STEM Action Center (lead), BSU & MICRON
- Idaho EPSCoR part of team to receive **CIRCLES Alliance NSF** grant (739K) to research Indigenous-based STEM education
 - CIRCLES is “Cultivating Indigenous Research Communities for Leadership in Education and STEM”
 - Alliance builds on existing partnerships with tribal communities in six regional EPSCoR states (ID, MT, NM, ND, SD, and WY)



Convergence of many Idaho EPSCoR Investments

- Asst Prof Marshall Ma (UI) 2016 new hire through Idaho EPSCoR Track-1 MILES program
- GEM3 Modeling lead Professor Barrie Robison, past EPSCoR participant
- GEM3 Data Management lead Dr. Luke Sheneman, RII Track-2 new hire
- In 2020 a **new** NSF EPSCoR Track-2 award – leveraging big data to improve prediction of tick-borne disease patterns and dynamics
 - \$5.83M
 - Collaborative with NV and NH



RII C2: Inter-Campus and Intra-Campus Connectivity (2010)



RII Track-1:
(2002, 2005 & 2013)



NEWS

Western Consortium Improves Connectivity Between Research Institutions



RII Track-2:
(2009 & 2013)

IDAHO
EPSCoR



Idaho's NSF EPSCoR – Building Research Competitiveness



IDAHO
EPSCoR

<https://www.idahoepscor.org>



GEM3
Genes by Environment
Modeling · Mechanisms · Mapping

<https://www.idahogem3.org>

**ESTABLISHED PROGRAM TO
STIMULATE COMPETITIVE
RESEARCH (EPSCoR)**

<https://www.nsf.gov/od/oia/programs/epscor/>

IDAHO NSF EPSCoR PROJECT ADVISORY BOARD (PAB) REPORT ON THE
IDAHO EPSCoR RESEARCH INFRASTRUCTURE IMPROVEMENT TRACK-1
COOPERATIVE AGREEMENT
(#IIA-1757324)

YEAR TWO
DECEMBER 2019

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INTRODUCTION

The RII project “Linking Genome to Phenome to Predict Adaptive Responses of Organisms to Changing Landscapes” was funded by the National Science Foundation Established Program to Stimulate Competitive Research (EPSCoR) and led to the Idaho Research Infrastructure Improvement (RII) Track-1 Cooperative Agreement. The project is referred to as *GEM3 for Genes to Environment: Modeling, Mechanisms, and Mapping*. The Idaho EPSCoR Project Advisory Board (PAB) met in Boise, Idaho December 1-3, 2019 as part of the *GEM3* annual meeting to hear progress toward the goals set forth in the Strategic Plan which was approved in May 2019. The theme of the meeting was “Collaboration, Integration, Convergence,” and the meeting was structured around those three areas. The PAB was asked to provide objective feedback on the progress to date as compared to the milestones for year two. A roster of current PAB members is provided in Appendix A.

NSF EPSCoR funded this 60-month award in October 2018 at \$20 million over five years. The State of Idaho has committed to contribute \$4 million in additional funds towards the project over the five-year period. The University of Idaho (UI) is the fiscal agent for the award, and Boise State University (BSU) and Idaho State University (ISU) receive funding through subcontracts. Dr. Andy Kliskey is the Idaho EPSCoR/IDeA Project Director (PD) and the Principal Investigator (PI) for the RII Track-1 Cooperative Agreement. Co-Principal Investigators are Dr. Ronald Hardy (University of Idaho), Dr. Jennifer Forbey (Boise State University), and Dr. Colden Baxter (Idaho State University).

This report is intended to provide feedback to help the GEM project team as they work toward goals and objectives of Year 2 and beyond as outlined in their Strategic Plan. This report is broken down into three parts: notable strengths of the project, challenges and recommendations, and conclusions.

STRENGTHS

The PAB would like to commend the project administrators in Idaho for recruiting Dr. Andy Kliskey as the Project Director. His previous experience will serve the project well. Under his leadership, the project has continued to make progress towards the objectives in the Strategic Plan. The project is on track according to its Programmatic Terms and Conditions. Agency and external partner engagement is high, as is involvement of the Primarily Undergraduate Institutions (PUIs). The project is meeting its diversity goals through recruitment of faculty, student and post-doctoral participants and by undergraduate involvement through the VIP. The EPSCoR office staff, led by Mr. Rick Schumaker, is exceptional at supporting the myriad needs of the project. Mr. Schumaker has shown consistent dedication to Idaho EPSCoR for many years. The EPSCoR State Committee continues its strong tradition of advocacy for Idaho EPSCoR amidst changes in leadership across the Idaho academic institutions. There is significant interest in this initiative from the State's highest level. In fact, the Governor gave the opening introductory talk at the meeting and highlighted the importance of STEM training for the future of Idaho, which shows the alignment of *GEM3* with statewide priorities.

Faculty recruiting is successful as evidenced by the new faculty hires. The non-traditional faculty positions for Tribal scientists have progressed, and two positions are being considered, one at Idaho State University and one at University of Idaho. There is on-going discussion of what these position will comprise in terms of scope, responsibilities and evaluation metrics. As these discussions progress, we encourage non-traditional aims and evaluation metrics be considered. It is important to ensure that these positions be valued equally with the more standard 50:50 research/teaching positions, by research faculty, their departments, and university heads. We support efforts to ensure that those hired in these alternative faculty lines are respected as colleagues at all levels of the university. A new coordinator was put in place at Boise State to coordinate the PUI involvement, which shows that this area is important to project leadership.

The PAB is encouraged by the interactions between the sagebrush and trout groups, which were just beginning at the last annual meeting. The two groups are interacting through in-person and videoconferenced meetings to create synergies. The Trout Summit drew scientists from the sagebrush

group. Also, the bi-weekly seminar series has been utilized effectively to bring together scientists and educators across the entire project. PAB members have been attending these meetings and are impressed by the quality of the talks and the attendance, which is high and consistent.

The PAB supports plans for moving toward agent-based models and mechanistic models. Existing preliminary information coming out of the mapping efforts and the visualization group are very promising and impressive. The products will be useful not only for researchers but also for stakeholder meetings and public outreach events.

Workforce development through the VIP framework is a systematic way to keep students engaged in research and integrate them into the broader *GEM3* research community. Front-loading development of VIP courses and modules in Years 1-3 is a good way to increase the impact of these efforts in the final years of the project. The support provided to faculty in both compensation and in logistical and curricular help should continue to make the VIPs impactful for faculty, graduate students, post-doctorates, and the undergraduate researchers involved.

Engagement of stakeholders including communities and agencies is high, especially considering that the project is just entering its second year. The work of the Social-Ecological System (SES) team across the state is showing success in bringing a wider community to the table and having them raise the issues important to their local environments.

In response to a PAB suggestion of increasing public engagement, the project implemented a Town Hall meeting series that consists of a scientific panel with short talks followed by question/answer. With over 50 people attending the first meeting, this series should prove to be a way to increase awareness of the public about the efforts of *GEM3* researchers and by extension, NSF.

The seed funding mechanism has funded four new projects that closely align with the mission and objectives of *GEM3*. The research projects expand the work in both sagebrush and trout and bring new investigators into the community of researchers. We encourage future funding opportunities to promote broadening of projects beyond the two focal species while keeping in line with overarching *GEM3* objectives. The workforce development project is career-focused and should improve workforce efforts in the area of conservation careers. A second round of seed funding will be awarded at the end of Year 2, which should increase research and education capacity as the teams move into Year 3 work.

The combination of internal evaluation to track project activities and outcomes with external evaluation to determine if the project is meeting its deliverables is working well for *GEM3*. As the new seed funding projects come on board, it will be important to include them in evaluation activities to capture the full impact of the work.

The project uses multiple means of providing updates on activities, including scientific webinars, a newsletter and the *GEM3* website itself. The newsletter is an effective means to keep participants up to date on the latest news and events, and it also functions to make key officials and the general public aware of the latest *GEM3* accomplishments.

CHALLENGES & RECOMMENDATIONS

The research projects have recruited talented graduate students and post-doctoral fellows to work toward meeting research goals. The PAB was impressed by the enthusiasm of new hires. However, the PAB has a few concerns related to the projects underway and provides the following recommendations, especially in light of the upcoming Reverse Site Visit with NSF in April 2020. Specific goals of sub-projects within the GEM3 framework were not always specified. Experimental designs were often presented only in broad terms, making it difficult for the PAB to provide specific guidance. Experimental objectives and design for each of the sub-projects should be articulated in detail for evaluation.

Projected temperature increases in Idaho climate link the sagebrush and trout research. The PAB would like the teams to articulate clearly what climate warming scenario(s) they are considering, and the assumptions and timelines to be evaluated. For example, a hotter/drier/more people scenario was mentioned at the meeting—are there other potential futures being considered? There are many other established groups investigating similar climate change scenarios and collecting data that could be useful to this project. Has the team worked with the National Center for Atmospheric Research (NCAR) to choose an appropriate set of climate outputs, or the newly established National Ecological Observatory Network (NEON) for potentially useful data, or the Northwest Climate Adaptation Science Center (CASC)? Such interactions will be useful in guiding scenario development, and so are important to engage in early on for maximum benefit. For example, NEON may have stream data that might be useful to trout scenario development.

In their presentation to the State Board of EPSCoR and the PAB, the GEM3 team labeled the sagebrush and redband trout management problems as “WICKED” problems. That is a recognition that it is not easy to arrive at a precise formulation of the problem, objectives, and constraints that all stakeholders will agree to. Approaches to solving wicked problems in the literature center around treating the problems as multi-objective optimization problems, which the team might benefit from considering. It appears that it would be useful for the team to identify a set of variables to be treated as objectives to be maximized or minimized and a set of constraints that must be satisfied. Examples of such variables might be amounts of sagebrush in particular regions, trout population distributions in particular streams, economic impacts of grouse hunting or trout fishing, sustainability of soil quality in the face of drought, fire, etc., carbon sequestration, and many other types of variables. Identifying such objectives and constraints enables the use of multi-objective optimization methods to build upon the mechanisms, modeling and mapping work the GEM3 team is undertaking. That allows formulation of alternative scenarios that are all optimal in some sense, so stakeholders can weigh them against each other to select more desirable ones for further exploration and potential implementation.

Modeling, one of the three M’s of GEM3, is an important tool that provides frameworks for integration of the information learned in the mechanisms and mapping activities. GEM3 projects are using many forms of models, including: 1) correlational models relating to abundance, genomic, and behavioral traits to geospatial information; and 2) agent-based models (ABMs) for both redband trout and sagebrush. The quality of the models depends largely on the data available to parameterize them and

the mechanistic knowledge used to determine their forms. Therefore, they are very sensitive to any gaps that exist in the availability of such information, either from within or external to GEM3 research. Care should be taken to utilize any relevant modeling information available in the literature or through collaborations with others in the Northwest who study similar topics. Models provide a means of estimating the effects of various potential restoration/maintenance treatments on the various objectives (including natural, environmental and economic effects) of interest, and determining whether any constraints necessary to make a solution feasible are met. Treatment scenarios that are inferior in all aspects to other identified scenarios can then be discarded.

Leadership should also consider how the Strategic Plan can be reformulated when tasks scheduled for completion early in the plan are delayed or abandoned.

Sagebrush

As mentioned at our last meeting, the choice of sagebrush as a taxon for the genetics work creates many challenges because of many difficulties such as a lack of genomic resources, polyploidy, and the taxonomic complexity. The PAB supports a flexible, adaptive approach to steer the research towards attainable goals as their research uncovers unexpected complexity. The PAB would like the team to develop specific milestones and consider alternative avenues of research if the proposed timelines are not met. For example, if sequencing the sagebrush genome is proving too difficult or slow in producing desired outcomes, a possible approach is to shift towards a greater emphasis on experimental work and more traditional population genetics approaches, both of which carry proven feasibility for this system.

The PAB also recommends developing more specific goals within the framework of the broad GEM3 goals of understanding role and future of sagebrush in the ecosystem. One of the stated goals is restoration of sagebrush ecosystems. How are you defining the restoration? Have you considered the carbon storage potential of the different sagebrush systems, including distributions and percent sagebrush cover, as well as the roles of different sub-species within the sagebrush complex?

Much more effort is needed to integrate related efforts being conducted by different labs within the state. We were surprised to find out that sagebrush population genomic work is being done at UI in addition to BSU. There did not appear to be any coordination between these complementary efforts.

Trout

Within the trout team, the PAB would like to see more specifics, e.g. with respect to which specific questions are being tackled by what specific experimental designs. There was mention of using a constant temperature design, which the PAB believes leaves out a level of realism essential to addressing environmental change, and does not address other variables that should be included. A simple common garden experimental setup may not accurately address the questions that the team is asking. For example, hypoxia will likely accompany reduction of stream flow with drought and higher temperatures expected with climate change. We recommend increased realism including pulses of temperature and other extreme events, including non-climatic natural and anthropogenic drivers.

Other Areas

On the administrative side, it will be important for the Statewide Committee to continue advocating for the EPSCoR project given the new Presidents at the universities. They need to understand the long-term importance of EPSCoR to the research enterprise in Idaho and its long-term beneficial outcomes for the people of Idaho.

Within workforce development, the PAB encourages the team to continue to track participants in all of the programs so that long-term impacts on career paths of students can be aggregated and studied to determine best strategies for engaging students in STEM.

The VIP program might benefit from required mentoring training for the graduate students and for post-doctorates mentoring undergraduates. An important component of this training could be presentation of the importance of mentoring experience to the mentors' professional development, and its place on their resumes. Ongoing meetings of mentors throughout the year have also been found to have a positive impact on the outcomes reported by undergraduate mentees.

CONCLUSIONS

At the close of the second year, the PAB found that the project is on track for meeting its objectives as outlined in the Strategic Plan, but some adjustment may be necessary as new research reveals unexpected complexities and impediments to proposed research plans. The PI and co-PIs are working together across research areas and making early progress in developing common language to further research objectives. The level of enthusiasm of the newly hired faculty, students and post-doctorates is high, and there is a desire for increasing the level of collaboration across disciplines. Workforce development efforts are ambitious and showing signs of success through the VIP program, faculty hires, and institutional focus on equity, diversity and inclusion. The PAB looks forward to staying engaged through the videoconference seminar series throughout Year 2 and to providing objective feedback as the project continues on its positive trajectory.

APPENDIX A. PROJECT ADVISORY BOARD MEMBERS

Fred Allendorf	Regents Professor of Biology Emeritus, University of Montana
Clifford Dahm	Professor Emeritus of Biology, University of New Mexico; Former Lead Scientist, California Delta Science Program
Erik Goodman	Executive Director, BEACON Center for the Study of Evolution in Action; Professor of Electrical and Computer Engineering and of Mechanical Engineering and of Computer Science and Engineering, Michigan State University
Michael Khonsari (attended virtually)	Dow Chemical Endowed Chair, Professor of Mechanical Engineering, Louisiana State University; Project Director, LA EPSCoR PD; Associate Commissioner for Sponsored Research and Development Programs, Louisiana Board of Regents
Camille Parmesan	Professor, CNRS Ecology Institute (SETE), Moulis, France; NMA Chair in Public Understanding of Marine Science & Human Health, School of Biological & Marine Sciences, Plymouth University, U.K.; Department of Geological Sciences, University of Texas at Austin, U.S.A.
Valerie Purdie-Vaughns (unable to attend)	Director for the Laboratory of Intergroup Relations and the Social Mind; Associate Professor in the Department of Psychology at Columbia University; core faculty for the Robert Wood Johnson Health & Society Scholars Program; research fellow at the Institute for Research on African-American Studies at Columbia University
Anna Waldron (PAB chair)	Associate Project Director, Missouri EPSCoR; Co-director of the Graduate Certificate in Science Outreach at University of Missouri

**INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS
OCTOBER 21, 2020**

SUBJECT

Presidents Leadership Council Report

REFERENCE

August 2020

Presidents Leadership Council provided a report on its work around system optimization and collaboration, funding formula, and communications with the Board.

BACKGROUND/DISCUSSION

The Presidents Leadership Council will provide an update on the fall semester in terms of the student experience, enrollment, COVID-19 response, and budgets.

ATTACHMENTS

Attachment 1 – President Presentations

STAFF COMMENTS AND RECOMMENDATIONS

The Board President asked the Presidents Leadership Council to provide the Board with a status report on the first semester given the extraordinary logistical challenges and uncertainties the institutions faced in re-opening their campuses.

BOARD ACTION

This item is for informational purposes only.

Fall 2020 Update

Dr. Marlene Tromp, President
October 2020



BOISE STATE UNIVERSITY



COVID-19 RESPONSE

- Morrison Center and ExtraMile Arena both used as high capacity classrooms
- 25% of fall face-to-face credit hours in the ExtraMile Arena
- Spent \$2M in classroom upgrades



725
faculty participated in
training for online /
remote course delivery

Totaling over **16,000** hours of training



COVID-19 RESPONSE



367

K-12 teachers registered for the
Introduction to Online Teaching course
offered by Boise State impacting up to

57,000 K-12 students

13,000

contact hours

in the Boise State Writing Project to help
them strengthen their hybrid, blended,
and online teaching



BRONCO GAP YEAR

*A “gap year” is all about taking time,
but still moving forward.*

*The Bronco Gap Year provides an
opportunity for you to save money,
focus your interests, and start or
restart your college experience with a
stronger sense of purpose.*

Pathways

- Social Entrepreneurship
- Education
- Public Service
- Build your own



STUDENT EXPERIENCE

We've got this covered.



HEALTH MEASURES

- Public health office
- Testing students
- Mental health and wellness
- Covid dashboard
- Physical distancing
- Facial coverings

Student survey

- 95% felt their health was protected
- 92% felt cared for



ENROLLMENT

Total degree-seeking enrollment

19,875

Up 0.5% over last year **Up 6.9%** from 5 years ago

Doctoral enrollment **403 students**
up 45.4% nearly double 2016 enrollment

Exceeded targets for the state's
60% goal each year

Transfer students
up 3.8%

3,525 Record number of
bachelor's degree
graduates last year

FIRST-YEAR DEGREE-SEEKING
STUDENT ENROLLMENT

Down 4.9% from last year
Up 9.3% from 5 years ago





BUDGET CHALLENGES

\$9.6M in total holdbacks
and budget cuts

\$15M in lost revenue

\$8.5M in increased costs including
testing costs, increased cleaning
protocols, investments in classroom
technology and staffing the Office of
Public Health

Around **\$2M** in classroom technology



PROJECT LAUNCHPAD

Confirmed Leadership Participants

- George Blumenthal, Director of the Center for the Study of Higher Education at UC Berkeley
 - Marlene Tromp, President of Boise State University
 - Maurie McInnis President of SUNY Stonybrook
 - Joan Gabel, President of U of MN
 - Donde Plowman, Chancellor U of TN
-
- Dr. Tammi Vacha-Haase, Breakout Session on Graduate Education
 - Dr. Leslie Webb, Breakout Session on Student Affairs





BOISE STATE UNIVERSITY



STATE BOARD OF EDUCATION UPDATE

**C. SCOTT GREEN
PRESIDENT
UNIVERSITY OF IDAHO
OCTOBER 2020**



COVID-19 HIGHLIGHTS

- Re-tested all Moscow based students October 6-16
- UI Lab servicing nursing homes, LCSC nursing students and other community partners when possible
- Partnered with on campus live-in Greek chapter houses on targeted surveillance testing and quarantine
- Successfully isolated positives living on campus throughout semester
- Continued all safety measures previously discussed with the Board



BUDGET HIGHLIGHTS

- Burning through ~\$20 million of cash per year in FY18 & FY19
- FY 20 audited financials indicate the cash burn is resolved.
Shows dedication of UI employees.
- Marked improvement with our reserves in FY20 from FY19.
Continuing efforts to reach 5% threshold.
- P3 process continues



ENROLLMENT & OTHER HIGHLIGHTS

- Overall slightly down from previous year
- Enroll Idaho and recruitment still taking place, but less access to schools due to COVID-19
- Hired new Vice President of Research & Development
- Hired new Chief Marketing Officer/Executive Director of Communications
- Rated #1 Best Value in the West by U.S. News & World Report



University
of Idaho

THANK YOU!

LC State COVID-19

What we've been doing & How it's going...



COVID-19 Response: Communication & Connection

Weekly Communications:

- Idaho Higher Ed System Conference Call
- DHR/Agency Directors
- K-12 (Lewiston, Clarkston)
- Public Health, SJRMC, Infectious Disease Specialist
Dr. David Souvenir, UI/Gritman, NIC
- AASCU, College/University Presidents and
Chancellors
- All Campus Meetings, Tuesday's at 2, Ask & Answer,
Monday Message, Video Messages...

LC State COVID-19 Tactical Group:

- Lead: Vice President Andy Hanson
 - 25-30 hours per week X 30 weeks and counting
- 14 Members
 - Conservative estimate of time spent dedicated to
COVID-19 related work: 6,500 hours and counting

Website: www.lcsc.edu/coronavirus



COVID-19 Response: Information & Actions

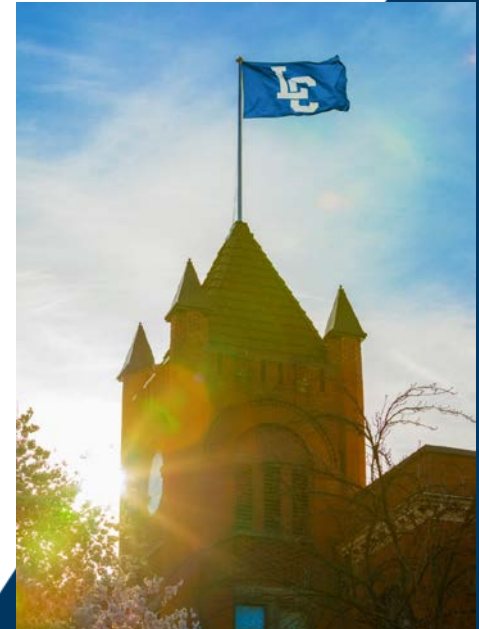
Instructional Alterations:

- 46 classrooms outfitted with remote delivery (AV) technology (enabling remote and live simultaneously)
- 16 outfitted with additional computer monitors
- 60 outfitted with voice amplification system
- Hallway & External Athletic Training (2nd facility), self-screening thermo-scanners
- Capacity adjustments and signage

Instructional Supplementation:

- Zoom licenses for 100% of faculty and staff and expanded cloud storage
- Campus hot spots & Outreach hot spot expansions
- Specialized software: nursing simulation, anatomy and physiology, CTE programs
- Instruction materials, laptops for checkout, accessibility accommodations
- Simulators: paramedic, dental assistant, nursing
 - Kits for at-home use: Sciences, CTE – ready for purchase if remote delivery required
 - GoPros

100% of campus/learning spaces have enhanced cleaning protocols and supplies



COVID-19 Response: Information & Actions (continued)

Conversion of general use spaces into instructional spaces:

- WCC and Silverthorne Theatre
- Library:
 - Clean Zone
 - Fall 2020 all study rooms converted to private rooms for students engaged in remote synchronous instruction (e.g., Zoom)

Employee surveys (April & July)

Faculty Survey (fall)

All Student Survey (fall)

Walk-about / Pop-in Feedback and Observations...

Spring 2021 Plans...





COVID Mitigation: Fall 2020

- ▶ 1/3 General Education Classes F2F
 - ▶ Social distance protocols, face coverings required in buildings
 - ▶ Additional hand sanitizers; Nightly sanitization of classrooms, meeting rooms, offices
- ▶ 2/3 GE Online
 - ▶ Blackboard, Zoom, HyFlex
- ▶ CTE courses mostly F2F, if necessary
- ▶ Contact Tracing Protocols in place
 - ▶ Trace self-reported positive cases for both employees and students
 - ▶ Isolation/self-monitor when employee or student has close, prolonged exposure to a positive case
- ▶ Working with Express Labs for expedited COVID-19 tests for staff and students



COVID-19 Online Info and Case Tracking

Quick Links

COVID-19 INFORMATION

Coronavirus Disease (COVID-19) Information

NOTICE

Face coverings required in CEI buildings.

Apply Now

Contact | About | COVID Information | HR/Careers | Site Map | CEI

Calendar

College of Eastern Idaho, 208.524.3000, 1600 S 25th E, Idaho Falls, ID 83404

Student Right To Know

2020 All Rights Reserved, AA/EEO Institution

Positive COVID-19 Cases This Week:

Self-reported since Sunday, 9/27/2020
Students: 3
Employees: 0

Positive COVID-19 Cases Last Week:

Self-reported from 9/20/2020 - 09/26/2020
Students: 2
Employees: 0

Positive COVID-19 Cases This Semester:

Self-reported since 8/24/2020
Students: 13
Employees: 3



COVID-19 Funds

HEERF-A	Student Portion - G5	\$492,847
HEERF-B HEERF-IP	Institution Portion - G5	\$492,847
GEER		\$165,965
CFAC	CTE	\$7,500
CFAC	WFT	\$19,510
CFAC	CEI General Funds	50,643
TOTAL		\$1,229,312

**INSTRUCTION, RESEARCH, AND STUDENT AFFAIRS
OCTOBER 21, 2020**

SUBJECT

IRSA Committee Priorities and Milestones – 2020-2021

BACKGROUND/DISCUSSION

The Instruction, Research, and Student Affairs (IRSA) Committee has established several priorities and accompanying milestones for the remainder of the 2020-2021 Fiscal Year. These priorities and milestones will help the Committee maintain momentum in achieving the general priorities of the Board this year.

ATTACHMENTS

Attachment 1 – IRSA Priorities and Milestones – 2020-2021

STAFF COMMENTS AND RECOMMENDATIONS

The IRSA Committee Priorities were discussed at the IRSA Committee meeting on August 13, 2020. Following this meeting, the IRSA Chair worked with Board staff to develop a set of milestones to accompany the priorities. These priorities and milestones were discussed and approved at the IRSA Committee meeting on October 8, 2020.

BOARD ACTION

This item is for informational purposes only.

Instruction, Research, and Student Affairs Committee

Priorities and Milestones for 2020-2021

The IRSA Committee has identified the following priorities and respective milestones for the remainder of Fiscal Year 2020-2021:

1. Go-On Rates and College Completion

Complete College America (CCA) developed strategies to improve go-on rates and success rates for college students. All eight institutions are actively implementing these strategies, but are at various points along the implementation continuum.

Milestones:

- Update Board Policy III.S. Remediation in response to the pandemic and to encourage institutions to continue moving forward on implementing corequisite remediation in math.
- Determine a board-level strategy for establishing math pathways in high school.
- Collect quantitative and qualitative data related to impact of various CCA strategies being implemented.¹
- Establish implementation and performance goals for the next fiscal year.²

2. Prior Learning Assessment and Adult Promise

Prior Learning Assessment (PLA) and Adult Promise efforts help students, especially adult students and military veterans, receive credit for educational experiences and training completed before college.

Milestones:

- Evaluate how institutions are implementing board policies related to PLA.
- Collect data related to PLA and Adult Promise implementation.
- Complete military crosswalks.
- Implement Adult Promise outreach and communication plan related to military crosswalks.
- Establish strategy for expanding Adult Promise efforts going forward.

¹ Some germane data are already collected and displayed on the Board's dashboard:
<https://dashboard.boardofed.idaho.gov/StatewideDashboards.html#timelineLine>

² Current performance measures in the Board's strategic plan include: percent of community college transfers that graduate from a four-year institution; percent of first time college freshman requiring remediation; twelve and thirty-six month college going rate; retention rate; sixty percent goal.

3. Open Education

Open education encompasses the many kinds of learning resources, teaching practices and education policies that use the flexibility of open educational resources (OER) to provide learners with high quality educational experiences. OER are teaching, learning, and research materials that are either (a) in the public domain or (b) licensed in a manner that provides everyone with free and perpetual permission to adapt and improve instructional materials. Open education initiatives can improve teaching and learning, while also reducing costs for students.

Milestones:

- Work collaborative with key stakeholders to update several policies related to open education in Idaho, including III.B. Academic Freedom and Responsibility, III.P. Students, III.U. Instructional Material Affordability, and V.M Intellectual Property.
- Complete OPAL Fellowship and report outcomes to the Legislature.
- Apply for new funding to expand open education efforts in Idaho.
- Define metrics to evaluate impact of open education efforts at our institutions.
- Establish strategy for expanding open education efforts in the future.

4. Transition to Postsecondary Education and Training

Reducing barriers in the college transition process is critical to ensuring as many Idaho citizens as possible go-on to some level of postsecondary education or training. Apply Idaho, Direct Admissions, Dual Credit, and Next Steps Idaho are among the core components of a comprehensive strategy for maximizing the go-on rate. Other IRSA priorities are also part of this strategy, including PLA and Online Idaho.

Milestones:

- Establish a statewide solution for Dual Credit transcripts, to remove procedural and financial barriers to students receiving and utilizing earned dual credits.
- Work with Presidents Leadership Council to establish milestones for other issues related to Dual Credit.
- Determine modified process, if necessary, for Direct Admissions for the next academic year.
- Begin conversations related to the future of college entrance exams and high school accountability exams in Idaho.

5. Online Idaho

Online Idaho is being designed to support sharing of common resources, services, and practices to benefit all forms of educational delivery, especially online delivery, at public postsecondary institutions in Idaho. Online Idaho will be a catalog of all available online courses and programs at our institutions, a course sharing platform for an initially small subset of online courses and programs that our institutions desire to

share, and a set of services, professional development offerings, and technology tools that fortify our institutions' efforts in developing and delivering high quality online courses and programs.

Milestones:

- Create and launch a public-facing catalog of online course and program offerings.
- Create and launch a public-facing course sharing platform.
- Encourage the development of joint degree programs to be offered via Online Idaho.
- Procure and implement services and technology tools to fortify online teaching and learning at our institutions.
- Develop a long-term business model and governance model for Online Idaho.
- Procure additional funding for Online Idaho for future operation and development.

6. Cybersecurity

In 2020, the Legislature approved \$1M for the development of a joint cybersecurity degree program. University of Idaho is managing this effort, in collaboration with the other eight institutions and industry partners. The Presidents Leadership Council (PLC) is providing leadership and oversight of the project.

Milestones

- Establish a reporting timeline from the PLC on the progress of this project.
- Update Board Policy III.Z. Planning and Delivery of Postsecondary Programs and Courses to remove barriers to development of joint degree programs.
- Ensure a joint degree program in cybersecurity is offered through Online Idaho.

7. Policy Revisions, Streamlining, and Implementation

Academic Affairs staff are reviewing all policies in Section III Postsecondary Affairs of the Board Policy Manual to identify ways to streamline language and develop strategies for supporting policy implementation.

Milestones:

- Develop a list of policies in need of revision.
- Establish a timeline for policy revisions.
- Complete policy revisions according to established timeline.
- Develop and begin implementing strategies for supporting policy implementation.