

## **Continuity of Laboratory instruction in CBS and SET due to COVID-19 Spring 2020**

### **Chemical and Biological Sciences**

Many CBS courses already have Bb communities. Bb “experts” have been identified for each area so faculty will know which of their colleagues are able to lend a hand if needed. Workgroup “leads” have been established for each course and serve as a resource for any questions pertaining to that particular course. CBS is working to create the same experience for all students in a particular course, e.g. topics, strategy for assessment, completion of signature assignments, common final (and review), etc.

To date, most lecture content is complete and available on Bb. Areas pre-generated class data sets for morphological unknowns and chemical unknowns to ensure that quantitative instruction will continue. Since the majority of CBS courses have labs, each lead produced a short video of a lab common to all course sections and distributed to all course faculty. Videos and course materials will continue to be shared among faculty.

Biotechnology faculty are reaching out to industry regarding the use of remote labs. Our program prides itself in providing hands on training with complex instrumentation used by industry. Involving industry in the decision will ensure the best outcome for students. Full-time Biotech faculty will offer ZOOM conferencing to coordinate efforts put in place. One option is to cover the theory and use simulations to introduce laboratory content; when campus access is available, hold several days of laboratory workshops to provide the hands-on experience. This gives students skills and confidence valued by industry.

Specific arrangements for each of the CBS courses that contains a lab can be found in Table A.

### **Science, Engineering, and Technology**

SET faculty have been identifying and testing credible simulation software that can be used to help meet the requirements of their labs. In some cases, licenses have been purchased and will be distributed to the students in the course. SET faculty are confident they will be able to deliver the experience necessary using this software and other virtual resources. Specific arrangements for each of the labs can be found in Table B.

Electrical Engineering (ENEE) and Engineering Science (ENES) courses with labs will provide online resources for students.

Cybersecurity and Networking courses (NWIT) are being offered fulling online utilizing the Racktop software. One option is to cover the theory and use simulations to introduce laboratory content; when campus access is available, hold several days of laboratory workshops to provide the hands-on experience. This gives students skills and confidence valued by industry.

Table A

**CBS – by course**

CHEM 131	Principles of Chemistry I	Virtual content identified
CHEM 132	Principles of Chemistry II	Virtual content identified
CHEM 135	General Chemistry for Engineers	Virtual content identified
CHEM 150	Essentials of Organic & Biochemistry	Virtual content identified
CHEM 203	Organic Chemistry I	Virtual content identified
CHEM 204	Organic Chemistry II	Virtual content identified
CHEM 272	Bioanalytical Laboratory (1 credit course) (4 hrs lab/week)	Chair has reached out to 4-year institution for ideas and suggestions.

BIOL 106	Environmental Biology Lab	Online resources available
BIOL 131	Human Body Laboratory	Simulation technology already in use
BIOL 150	Principles of Biology I	Working to develop alternative given change in access to campus. Plan to be completed by 3/24. Online resources will be used.
BIOL 151	Principles of Biology II	Working to develop alternative given change in access to campus. Plan to be completed by 3/24. Online resources will be used.
BIOL 210	Microbiology	Contact JHU- offers micro online to see how they do unknowns
BIOL 212	Anatomy & Physiology I	Simulation technology already in use
BIOL 213	Anatomy & Physiology II	Simulation technology already in use
BIOL 230	Molecular Cell Biology	Greatest challenge. Faculty member

Table B

**SET - by course**

PHYS 010	Intro to Physics	Lab manager and instructors creating labs simulations.
PHYS 110	Light and Sound in the Arts	Lab manager and instructors creating labs simulations.
PHYS 161	General Physics I Mechanics & Hear	(No lab)
PHYS 203	General Physics I (non-engineering)	Vernier -PHET Simulations (Univ of CO)
PHYS 204	General Physics II (non-engineering)	PHET Simulations (Univ of CO)
PHYS 262	General Physics II Electricity & Magnetism	Testing oscilloscope software
PHYS 263	General Physics III Waves, Optics & Modern Physics	Vernier – PHET Software
PHYS 262 ENEE 207	Capstone labs	"Every Circuit" from Muse Maze Software