Chief Dull Knife College

Special Edition
Fall 2020

Fall Semester Student Opportunities Edition

Free Tuition

For ALL Students

ALL CLASSES DAYTIME AND EVENING

Many before you have invested in the Journey to bring you to this place and time.

Now is the Time to Begin.

Have you been wondering what to do this fall?

Does Face-to-Face instruction appeal to you?

If you are ready to start your college career, Chief Dull Knife College has a number of great opportunities to help get you started. Come in to the college and see how easy it is to get started or to continue your education. All credits from Chief Dull Knife College are aligned with and transferrable to every unit of the Montana University System. We do SAFE face to face "in person" instruction. Grab a friend and form a car pool. All of your PELL, scholarship, intern and tutoring money goes into YOUR pocket.

In This Special Edition

406-477-6215

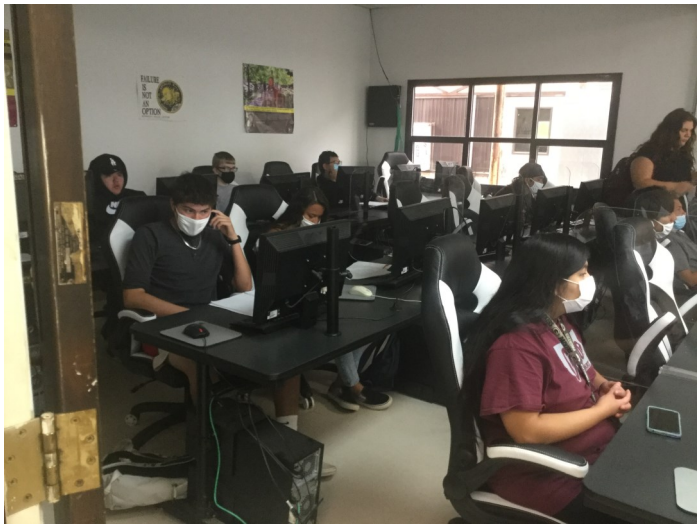
www.cdkc.edu

Edited By Jeff Hooker

Published by Chief Dull Knife College, Lame Deer, MT

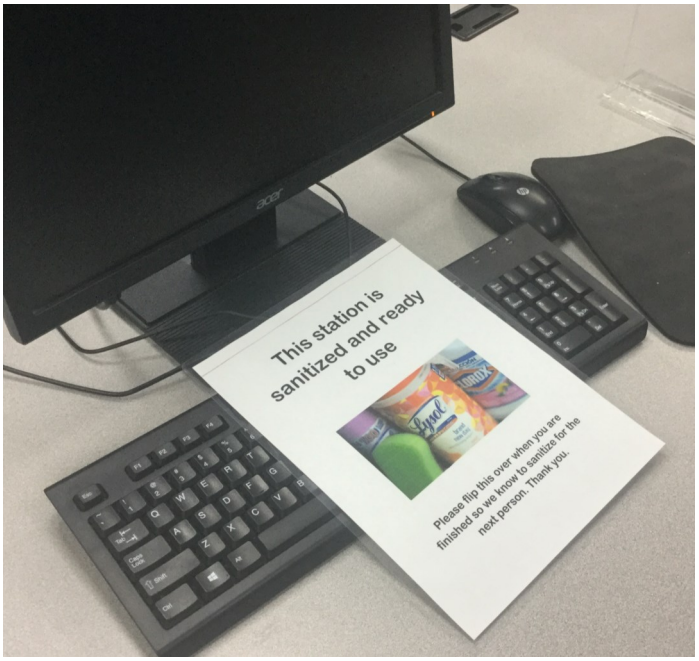
A Safe Campus for “Face-to-Face” Education

Students, staff and faculty are our number one concern during this Covid-19 Pandemic. All visitors to campus are “temped” at the door and provided a mask if they do not have one. Hand sanitizers are available in numerous locations as you enter the building. Only two entrances to the building are open and both are monitored by personnel. Each classroom has been arranged to separate students from potential contact with others. Plexiglass dividers are installed in most rooms to aid in separating individuals. Masks are required for everyone on campus; faculty, staff and students. The college is using state-of-the-art Ultraviolet Sanitizers at each entrance to the college and as a handheld tool to sanitize individual student stations after each class meeting.



A Safe Campus for “Face-to-Face” Education

Individual workstations are labeled so users know if the station has been sanitized after the last use. As stated earlier, Plexiglass dividers are installed in many rooms to aid in separating individuals to a “socially safe” distance. The college utilizes state-of-the-art handheld Ultraviolet Sanitizers sanitize individual student stations after each class meeting. The college has held a successful Summer Session and is the only Tribal College in Montana to offer SAFE face-to-face instruction for our students.



A Safe Campus for “Face-to-Face” Education

Opportunities at Chief Dull Knife College

2020-2021 Academic Year

- **FREE LUNCH** - Free lunch every school day. Enjoy $10 in lunch credit at our on-site cafeteria.
- **FREE BOOKS** - No need to run up a bill like other colleges. All books are free and some supplies are also discounted
- **GET SQUARE WITH FEDERAL FINANCIAL AID** – Complete a "semester on your own" as required by Federal Financial Aid agencies if you are on academic suspension.
- **NO STUDENT DENIED BECAUSE OF PREVIOUS BILL AT COLLEGE** - Have a past bill with the college? That is not a problem for this school year. Come and enroll, you will not be denied.
- **INTERNSHIPS AVAILABLE IN STEM AND OTHER AREAS** - Work up to 10 hours per week as an intern and make as much as $15 per hour.
- **TUTOR POSITIONS AVAILABLE** - Tutor other students and make up to $14 per hour
- **SCHOLARSHIPS AVAILABLE** - Scholarships are a available from a wide variety of sources for Native and Non-Native students $500 - $1500
- **AMERICAN INDIAN COLLEGE FUND SCHOLARSHIP** - Guaranteed for every Native American student. $500 PER SEMESTER
- **FEDERAL WORK STUDY AVAILABLE** - Available for all students in good standing with the Federal Agencies (see above for help with that)
- **HELP WITH FILING YOUR FAFSA** - This is a critical document for aid. Income reporting from parents is no longer required.
- **PELL PAYS UP TO $3300 PER SEMESTER** - Students are usually eligible for PELL but must fill out a FAFSA form and not be on "suspension" (see above)

Summer Research With NASA

Each summer CDKC students make a trip to Wallops Island in Virginia for a "payload" workshop sponsored by NASA and The University of Colorado Space Grant Consortium. Six to nine students travel with faculty members for a twelve day stay on the east coast of Virginia in June. The trip includes a visit to Goddard Space Flight Facility where the giant replacement telescope for the Hubbell telescope is being assembled. Goddard is the parent NASA center for the Wallops Flight Facility. The trip is funded by a three year NASA grant and a five year National Science Foundation grant awarded to Chief Dull Knife College.

406-477-6215

Ext-116 Gary Ramsey

Heavy Equipment Simulators
Virtual Reality Booths

The new Simulator / Virtual Reality Lab has three heavy equipment operation training simulators from Caterpillar and John Deere. Caterpillar for wheel loader and excavator; John Deere for bulldozer and construction back hoe. They include fundamental training programs for each machine type. The software provides focused training for the common tasks in daily operations of each type of machine. The training curriculum includes machine inspection and proper safety procedures along with the use of safety gear. Student performance and progress can be tracked and evaluated in the management module.

The John Deere simulator is a multi-function unit that can be used for bulldozer or construction loader/ back hoe training. The functionality is changed with removable controller modules for each machine type. The John Deere simulator and one of the Caterpillar simulators have motion bases that provide additional realism to the training.

406-477-6215

Ext-108 Kevin Pleier

JOHN DEERE

Student Opportunity

These simulators are not presently part of any college program but the college is exploring ways to utilize them effectively. One possibility would be a collaboration with Miles Community College or Salish Kootenai College where students could do preliminary training at CDKC then move on for advanced training in the actual machines in other school's programs. Other uses are being explored as well.

The lab also includes 2 Virtual Reality stations where students can explore various environments in simulated 3D reality. Each station includes a large screen display that allows spectators to see some of what the user is experiencing. The use of VR in education is still in the very early stages. Some possibilities include Robotics, Physics, Anatomy and Physiology and Medical Studies. Also, these things are just plain fun!

Drone technology to help solve todays issues

Come Fly with me

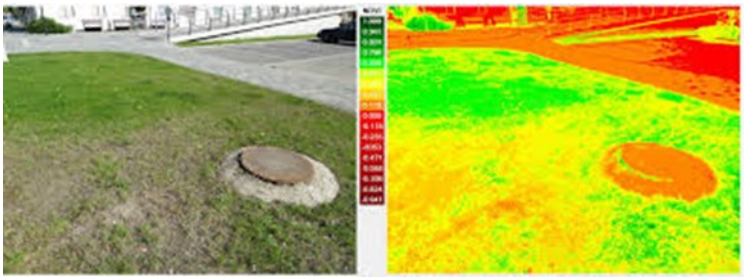
Drone technology is expanding rapidly and so are the opportunities for its usage. Students will be taught how to fly and process the picture data for specific projects on the Northern Cheyenne Reservation. Students will also have the opportunity to take the Part 107 Drone pilot test to be qualified to fly drones for commercial applications.

Butch Kasubick, Instructor

"My first degree is in cultural anthropology, specifically Native American Culture. After graduation I spent Nine years serving our country in the US Army special forces. After being honorably discharged I received a second degree in chemistry. With my degree in chemistry I have worked in the pharmaceutical industry for 15 years in research and development creating anti-cancer medications. During this time, I completed a Masters Degree in Engineering. After 15 years it was time for a change, so I went back to school and received my Masters Degree in Education. I have taught classes from grades six to twelve in public education. I am now employed here at Chief Dull Knife College as a teacher and research scientist."

Student Opportunity

Five lenses camera allows us to capture light in the Red, Blue, Green, Near infrared, and normal light. This will allow us to determine many different conditions of the land, such as plant cov-



The college also has begun a weather balloon program. Weather balloons are launched with a payload of instruments to collect data on temperature, humidity, wind speed, and altitude. The payload is launched with the balloon and can go up to 100,000 feet before returning to the earth on a parachute. The data collected can be used to build and predict upcoming weather. We are currently working with the Montana Space Consortium and Dr. Jennifer Fowler from the University of Montana to create a a ballooning program here at CDKC. We are also working with the National Weather Service in Billings MT. The NWS would like to use our data to help improve their forecasting abilities for southeastern Montana.

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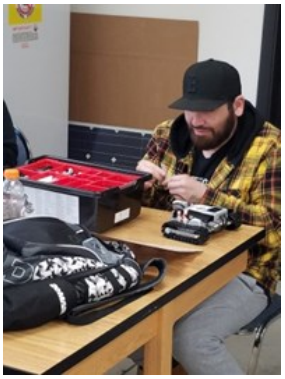
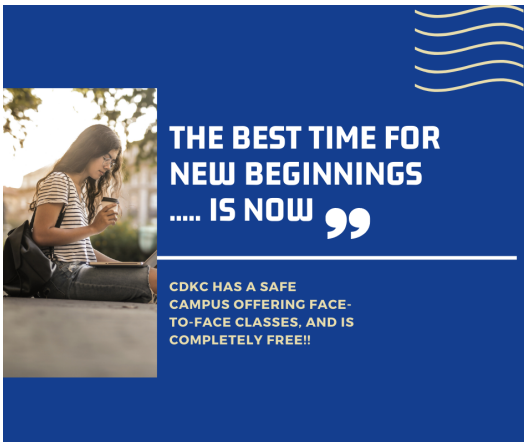
Ext-159 Butch Kasubick

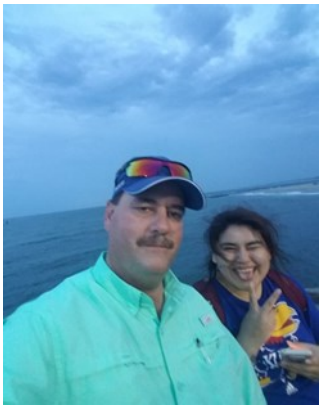
Robots Have Arrived

Chief Dull Knife College began offering a course in Robotics during the first 8 week session of Spring 2020 and the course was very well-received. Successes in the course combined with previous intern activities at Wallops Island Flight Facility have inspired a brand new research project beginning Fall 2020. Students will have the opportunity to write code, construct, and deploy a variety of robotic devices using microbit processing boards, including environmental and meteorological sensors. Students will work with Dale DeCock to create a weather station that will supplement data at some of the research field sites. Future goals of the project include deploying sensors to areas in the field that are otherwise inaccessible, working with Gary Ramsey in greenhouse applications, constructing payloads to assist in data collection from weather balloons with Butch Kasubick, and designing and constructing devices to help collect soil and water samples with Erika Sturn Burt.



Student Opportunity





Dale DeCock with student

Dale DeCock teaches chemistry, physics, robotics, and geology at CDKC. Dale is also a member of the STEM intern faculty mentor program at CDKC. Born and raised in Hysham, MT, Dale has spent his entire life as a Montanan, completing a Bachelor's degree in teaching from Western Montana College in Dillon (1990) and earned a Master's Degree in Education from American University in 2012. He began his teaching career in 1990 at Colstrip High School, where he spent 28 years. Dale began teaching science at Chief Dull Knife College in 2018.

406-477-6215

Ext-146 Dale DeCock

Fall Semester 2020 All Classes

Course #	Course Title	Session	Days	Time	Cr.	Room	Instructor
Addiction Studies							
AD 252	Alcohol, Tobacco and other Drugs	Semester	MWF	1:00 - 1:55	3	208	Gaskill
AD 254	Introduction to Diversity Counseling	Night	W	5:30 - 8:00	3	208	Ferris
AD 256	Assessment in Human Services-Addiction	Semester	MWF	2:00 - 2:55	3	208	Gaskill
Arts							
AC 154	Introduction to Photography	Fall 1	MW	5:00 - 7:30	3	206	Ditonno
AC 165	Introduction to Drawing	Semester	TTH	10:30 - 12:05	3	205	A Crow
Agricultural Sciences							
AG 100-01	Introduction to Welding	Fall 1	MWF	1:00 - 2:35	3	weld lab	J Hafer
AG 100-02	Introduction to Welding	Fall 2	TTh	1:00 - 3:30	3	weld lab	J Hafer
AG 202	Intermediate Welding	Fall 2	MWF	2:35 - 4:10	3	weld lab	J Hafer
AG 250	Introduction to Animal Science	Semester	MWF	9:00 - 9:55	3	208	J Hafer
AG 255	Introduction to Soil Science	Semester	TTh	9:00 -10:35	3	208	J Hafer
Business							
BU 150	Introduction to Business	Semester	Online		3	Online	A Wuest
BU 151	Principles of Accounting I	Night	T	5:30 - 8:00	3	306	S Neiman
BU 251	Microeconomics	Semester	TTH	1:00 - 2:35	3	306	S Neiman
Communication Arts							
CA 071-076-01	English Skills Seminar	Fall 1	MTWTH	9:00 - 9:55	1	202	A Hedges
CA 071-076-02	English Skills Seminar	Fall 1	MTWTH	10:00 - 10:55	1	202	A Hedges
CA 071-076-03	English Skills Seminar	Fall 1	MTWTH	11:00 - 11:55	1	202	A Hedges
CA 071-076-04	English Skills Seminar	Fall 1	MTWTH	3:00 - 3:55	1	202	A Hedges
CA 095-01	Language Skills Lab	Fall I	MWF	8:30 - 10:05	3	126	T Rollefson
CA 095-02	Language Skills Lab	Fall 2	MWF	8:30 - 10:05	3	126	T Rollefson
CA 151-01	College Writing I	Fall 1	MWF	10:30 - 12:05	3	126	K Bertin
CA 151-02	College Writing I	Fall 2	MWF	1:00 - 2:35	3	126	K Bertin
CA 151-03	College Writing 1	Semester	M	5:30 - 8:00	3	205	Staff
CA 165	Introduction to Public Speaking	Semester	MWF	9:00 - 9:55	3	205	K Bertin
CA 251	College Writing II	Fall 1	MWF	1:00 - 2:35	3	202	A Hedges
CA 251	College Writing II	Fall 2	MWF	3:00-4:35	3	202	Staff
Construction							
CR 291	Home Remodel *Pending Course Approval	Semester	MTWTHF	8:00 - 4:00	15	TBD	J Marien
Cheyenne Studies							
CH 151	Cheyenne Beadwork	Semester	TTH	3:00 - 4:35	3	122	Highbull
CH 152	Cheyenne Beadwork II	Semester	TTH	3:00 - 4:35	3	122	Highbull
CH 161-01	Cheyenne Language I	Fall 1	MWF	10:30 - 12:05	3	122	Medicinebull
CH 162	Cheyenne Language II	Fall 1	MWF	1:00 - 2:35	3	122	Medicinebull
CH 180	Foundations of Cheyenne Oral Tradition	Semester	TTH	10:30 - 12:05	3	122	Medicinebull
CH 205	Conversational Cheyenne	Fall 2	MWF	10:30 - 12:05	3	122	Medicinebull
CH 262	Cheyenne Language III	Fall 2	MWF	1:00 - 2:35	3	122	Medicinebull
CH 270	History of the Cheyenne People	Fall 1	MWF	1:00 - 2:35	3	121	Nightwalker
CH 270	History of the Cheyenne People	Fall 2	MWF	10:30 - 12:05	3	121	Nightwalker
Commputer Applications							
CS 151	Word Processing	Fall 2	MWF	10:30 - 12:05	3	206	D Pleier
CS 156	Spreadsheets	Fall 1	MWF	10:30 - 12:05	3	206	D Pleier
CS 162	Fundamentals of Computer Applications	Semester	TTH	9:00 - 10:35	3	206	D Pleier
CS 260	Introduction to GIS	Semester	TTH	1:00 - 2:35	3	206	D Pleier
CS 291-01	3D Printing and Design	Fall 2	MWF	2:00 - 3:35	3	206	D Pleier
Education							
ED 105	Health, Safety, Nutrition for Young Child	Night	T	5:30 - 8:00			Hedges
ED 150	Society, Schools and Teachers	Night	M	5:00 - 7:30	3	122	Briggs

Fall Semester 2020 All Classes

Course #	Course Title	Session	Days	Time	Cr.	Room	Instructor
History							
HS 152	Western Civilization II	Fall 1	MWF	1:00 - 2:35	3	205	T Rollefson
HS 251	U S History I	Semester	TTH	10:30 - 12:05	3	306	T Rollefson
HS 251-02	U S History I	Semester	MWF	4:00 - 4:55	3	205	Staff
Literature							
LI 151	Introduction to Literature	Semester	TTH	1:00 -3:30	3	207	T Rollefson
Mathematics							
MA 071-079-01	Math Skills Seminar		MTWTH	9:00 - 9:55	1	115	BHR
MA 071-079-02	Math Skills Seminar		MTWTH	10:00 - 10:55	1	115	BHR
MA 071-079-03	Math Skills Seminar		MTWTH	11:00 - 11:55	1	115	BHR
MA 071-079-04	Math Skills Seminar		MTWTH	1:00 - 1:55	1	115	BHR
MA 071-079-05	Math Skills Seminar		MTWTH	2:00 - 2:55	1	115	BHR
MA 071-079-06	Math Skills Seminar		MTWTH	3:00 - 3:55	1	115	BHR
MA 071-079-07	Math Skills Seminar		MTWTH	4:00 - 4:55	1	115	BHR
MA 151	College Algebra	Semester	MTWTH	9:00 - 9:55	4	121	Hooker
MA 151-02	College Algebra	Semester	MTWTH	4:00 - 4:55	4	121	Bertin
MA 156	Contemporary Math	Fall 1	MWF	10:30 - 12:05	3	306	Hooker
MA 172	Math for Elementary Teachers I	Night	T	5:30 - 8:00	3	121	J Bertin
MA 255	Statistical Methods	Semester	MTWTH	4:00 - 4:55	4	126	Staff
MA 262	Calculus I	Semester	MTWTH	8:00 -8:55	4	121	Ramsey
Music							
MU 151	Beginning Instrumental Studio: Guitar	Night	M	6:00 - 8:30	3	121	Maloney
Native American Studies							
NS 150	Introduction to Native American Studies	Semester	MWF	3:00 - 3:55	3	121	Nightwalker
NS 151	Tribal Governments	Semester	TTH	1:00 - 2:35	3	121	Nightwalker
NS 160	Introduction to Native American Art	Fall 1	MWF	10:30 - 12:05	3	205	Nightwalker
Natural Resorces							
NR 250	Ecological Restoration I	Semester	MWF	3:00 - 3:55	3	209	Sturn
Psychology							
PY 150	Introduction to Psychology	Fall 1	MWF	10:30 - 12:05	3	208	Gaskill
PY 240	Abnormal Psychology	Night	W	5:30 - 8:00	3	205	Gaskill
Religious Studies							
RS 250	Introduction to World Religions	Fall 2	MWF	1:00 - 2:35	3	121	Briggs
Science							
SC 154	Geology with Lab	Fall 1	MTWTH	1:00 - 3:00	4	209	DeCock
SC 154-02	Geology with Lab	Semester	MTW	5:00 - 6:30	4	209	Staff
SC 158	Discover Biology with Lab	Fall 1	MTWF	1:00 -3:00	4	210	Stiff
SC 159	Our Physical World	Semester	MTHF	9:00 - 9:55	4	209	DeCock
	Lab		T	9:00 - 11:00		209	DeCock
SC 162	Principles of Biological Diversity	Semester	MWF	3:00 - 3:55	4	210	Stiff
	Lab		T	3:00 - 5:00		210	Stiff
SC 171	Introduction to General Chemistry	Semester	MWF	11:00 - 11:55	4	209	DeCock
	Lab		TH	11:00 - 1:00		209	DeCock
SC 263	Human Anatomy and Physiology	Semester	MWF	10:00 - 10:55	5	210	Stiff
	Lab		TTH	10:00 - 12:00		210	Stiff
SC 266	Botany with Lab	Fall 2	MTWF	1:00 - 3:00	4	210	Stiff
Social Science							
SS 151	Introduction to Sociology	Night	TH	5:30 - 8:00	3	208	Russell
SS 250	Introduction to Cultural Anthropology	Semester	TTH	9:00 - 10:35	3	121	Rollefson
SS 291	Stone Tool Reproduction	Night	TH	5:30 - 8:00	3	209	Kasubick

Second 8-week Session Fall — Starts October 26

Course #	Course Title	Session	Days	Time	Cr.	Room	Instructor
Addiction Studies							
Agricultural Sciences							
AG 100-02	Introduction to Welding	Fall 2	TTh	1:00 - 3:30	3	weld lab	J Hafer
AG 202	Intermediate Welding	Fall 2	MWF	2:35 - 4:10	3	weld lab	J Hafer
Communication Arts							
CA 095-02	Language Skills Lab	Fall 2	MWF	8:30 - 10:05	3	126	T Rollefson
CA 151-02	College Writing I	Fall 2	MWF	1:00 - 2:35	3	126	K Bertin
CA 251	College Writing II	Fall 2	MWF	3:00 - 4:35	3	202	Staff
Cheyenne Studies							
CH 205	Conversational Cheyenne	Fall 2	MWF	10:30 - 12:05	3	122	Medicinebull
CH 262	Cheyenne Language III	Fall 2	MWF	1:00 - 2:35	3	122	Medicinebull
CH 270	History of the Cheyenne People	Fall 2	MWF	10:30 - 12:05	3	121	Nightwalker
Computer Applications							
CS 151	Word Processing	Fall 2	MWF	10:30 - 12:05	3	206	D Pleier
CS 291-01	3D Printing and Design	Fall 2	MWF	2:00 - 3:35	3	206	D Pleier
Religious Studies							
RS 250	Introduction to World Religions	Fall 2	MWF	1:00 - 2:35	3	121	Briggs
Science							
SC 266	Botany with Lab	Fall 2	MTWF	1:00 - 3:00	4	210	Stiff

Night Classes — Start August 31

Course #	Course Title	Session	Days	Time	Cr.	Room	Instructor
Addiction Studies							
AD 254	Introduction to Diversity Counseling	Night	W	5:30 - 8:00	3	208	Ferris
Business							
BU 151	Principles of Accounting I	Night	T	5:30 - 8:00	3	306	S Neiman
Education							
ED 105	Health, Safety, Nutrition for Young Child	Night	T	5:30 - 8:00			Hedges
ED 150	Society, Schools and Teachers	Night	M	5:00 - 7:30	3	122	Briggs
Mathematics							
MA 172	Math for Elementary Teachers I	Night	T	5:30 - 8:00	3	121	J Bertin
Music							
MU 151	Beginning Instrumental Studio: Guitar	Night	M	6:00 - 8:30	3	121	Maloney
Psychology							
PY 240	Abnormal Psychology	Night	W	5:30 - 8:00	3	205	Gaskill
Social Science							
SS 151	Introduction to Sociology	Night	TH	5:30 - 8:00	3	208	Russell
SS 291	Stone Tool Reproduction	Night	TH	5:30 - 8:00	3	209	Kasubick

First 8-Week Session Fall — Starts August 31

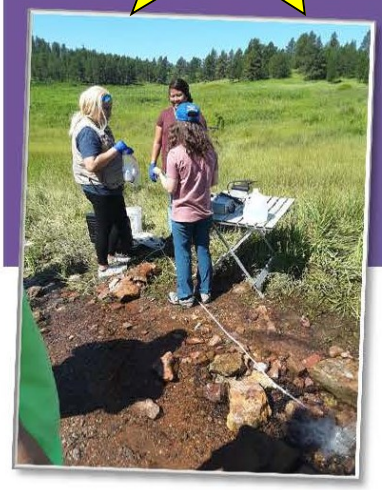
Course #	Course Title	Session	Days	Time	Cr.	Room	Instructor
Arts							
AC 154	Introduction to Photography	Fall 1	MW	5:00 - 7:30	3	206	Ditonno
Agricultural Sciences							
AG 100-01	Introduction to Welding	Fall 1	MWF	1:00 - 2:35	3	weld lab	J Hafer
Communication Arts							
CA 071-076-01	English Skills Seminar	Fall 1	MTWTH	9:00 - 9:55	1	202	A Hedges
CA 071-076-02	English Skills Seminar	Fall 1	MTWTH	10:00 - 10:55	1	202	A Hedges
CA 071-076-03	English Skills Seminar	Fall 1	MTWTH	11:00 - 11:55	1	202	A Hedges
CA 071-076-04	English Skills Seminar	Fall 1	MTWTH	3:00 - 3:55	1	202	A Hedges
CA 095-01	Language Skills Lab	Fall I	MWF	8:30 - 10:05	3	126	T Rollefson
CA 151-01	College Writing I	Fall 1	MWF	10:30 - 12:05	3	126	K Bertin
CA 251	College Writing II	Fall 1	MWF	1:00 - 2:35	3	202	A Hedges
Cheyenne Studies							
CH 161-01	Cheyenne Language I	Fall 1	MWF	10:30 - 12:05	3	122	Medicinebull
CH 162	Cheyenne Language II	Fall 1	MWF	1:00 - 2:35	3	122	Medicinebull
CH 270	History of the Cheyenne People	Fall 1	MWF	1:00 - 2:35	3	121	Nightwalker
Computer Applications							
CS 156	Spreadsheets	Fall 1	MWF	10:30 - 12:05	3	206	D Pleier
History							
HS 152	Western Civilization II	Fall 1	MWF	1:00 - 2:35	3	205	T Rollefson
Mathematics							
MA 156	Contemporary Math	Fall 1	MWF	10:30 - 12:05	3	306	Hooker
Native American Studies							
NS 160	Introduction to Native American Art	Fall 1	MWF	10:30 - 12:05	3	205	Nightwalker
Psychology							
PY 150	Introduction to Psychology	Fall 1	MWF	10:30 - 12:05	3	208	Gaskill
Science							
SC 154	Geology with Lab	Fall 1	MTWTH	1:00 - 3:00	4	209	DeCock
SC 158	Discover Biology with Lab	Fall 1	MTWF	1:00 -3:00	4	210	Stiff

Free Tuition, Free Books, Free Lunch

Student Opportunity

Water Quality at CDKC

From Field to Lab



Science unfiltered

Students at CDKC have the opportunity to routinely participate in ongoing water research projects, which aim to assess and evaluate watershed and hydrological processes. Students will be able to utilize the most up-to-date technology and instrumentation while building skills in research and industry standards. Our work is currently focused on water chemistry and ecosystem health, but, while working with Erika Sturn Burt, information will be analyzed in the context of environmental conservation, restoration, and all the factors that contribute to healthy waters for all species.

Goals of Water Research Program:

- Learn standard field methods for water sampling and standard laboratory methods for water testing
- Collect samples and field data from numerous watersheds to understand regional hydrological processes
- Analyze samples in the lab to learn about different chemistries present in several water sources
- Assess and evaluate potential sources that could diminish water quality and explore solutions on how to restore quality of water sources

What can we do in the field?

- Obtain data for dissolved oxygen, pH, temperature, barometric pressure, conductivity, turbidity (water clarity), velocity, GPS data, and macroinvertebrates
- We use a variety of equipment including YSI handheld meters, secchi disks and portable turbidimeter, depth-capture device, flow velocity meter, Geopump brand peristaltic pump for both surface water and groundwater sampling with optional filtration unit

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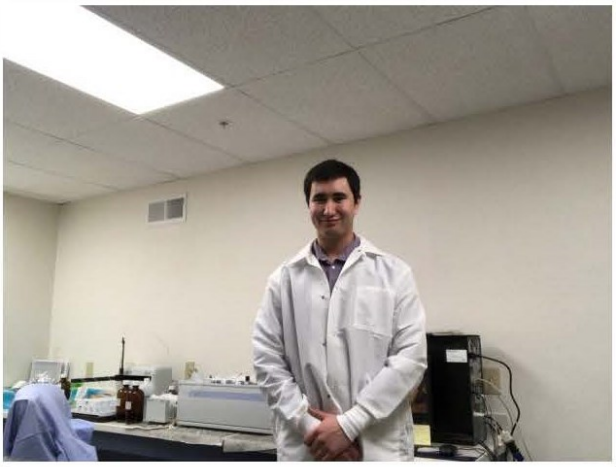
Ext-141 Erika Sturn Burt



Hands on Lab Training

CDKC offers students the unique opportunity to train with scientific instrumentation used by researchers and industry professionals. The Water Lab has the ability to test for common nutrients, such as nitrates, phosphates, and ammonia, using a Lachat QuikChem FIA colorimeter. Nutrient analyses are of interest due to the effects they have on algae formation in water sources.

Data Driven

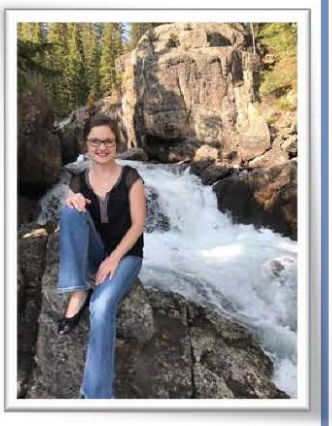
Current projects aim to establish a baseline of water chemistry data so that potential trends or changes may be observed over time. Students will work to create a repository of this data, which may be used in driving future research, monitoring or restoration projects, and discussions with the community.

Coming soon!

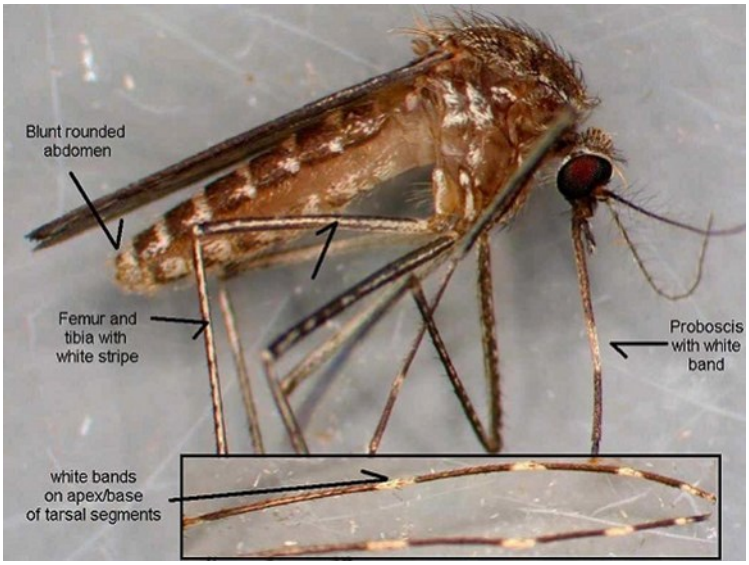
CDKC's research program is excited to announce the arrival of a brand new instrument, which will be ready for use by the Fall 2020 semester. The Metrohm IC (ion chromatography) will be used to analyze water samples (and even soil extracts) for common anions and cations like sulfates, salts, and metals. Students will work with Erika to learn all the neat tips and tricks to using sophisticated instrumentation on samples collected in the field.

A little about the instructor…

Erika Sturn Burt is the Research Director and Environmental Sciences Instructor at CDKC. She specializes in water chemistry, hydrology, and geology and enjoys taking students outside for fresh air and science. Erika previously worked as an analytical chemist for an environmental lab in Billings. She received a Bachelor's of Science in Geology from Rocky Mountain College (2012) and a Master's of Science in Land Resources and Environmental Science from Montana State University-Bozeman (2016). Her dissertation focused on analyzing stream water within the Gallatin Valley watershed using geochemical tracers to understand stream chemistry and hydrologic process domains.

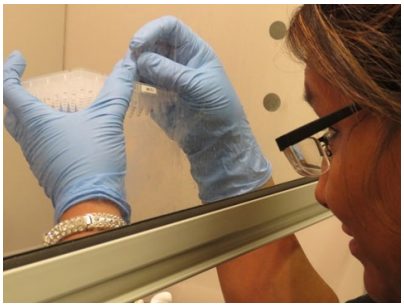


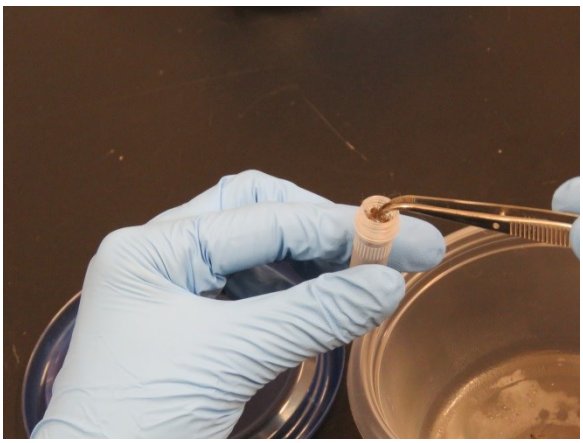
Mosquito Research at CDKC



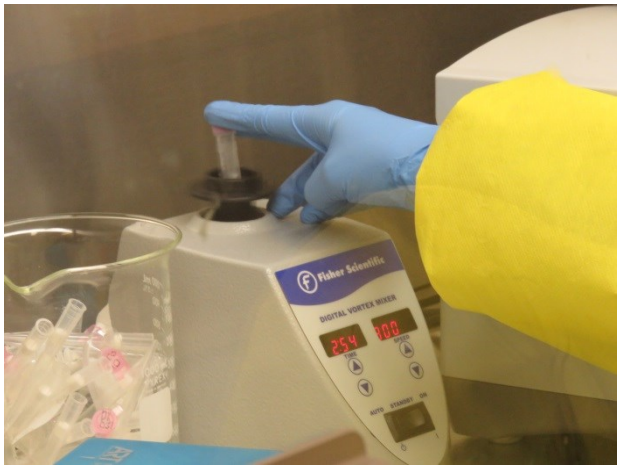
Student centered mosquito research at CDKC has been going on for over 8 years. The early research centered on the presence or absence of West Nile Virus in mosquitoes on and near the Northern Cheyenne Reservation. West Nile Virus is very dangerous for horses in that approximately 30-40% of the cases are fatal. It also effect humans although about 80% experience no effects at all, about 20% get West Nile fever, and less than 1% of infected patients will develop severe neuro-invasive disease. West Nile Virus is transmitted through certain species of mosquitos. At CDKC we trap mosquitos and test for the presence of West Nile Virus. We set traps in areas that are rich in mosquitos. Once we have trapped the mosquitoes, we sort them by species. There are often a lot of mosquitos, but very few that are carriers of the disease. The possible carriers are then tested for the virus. Trapping sites and results are recorded and located using GPS/GIS mapping technology.

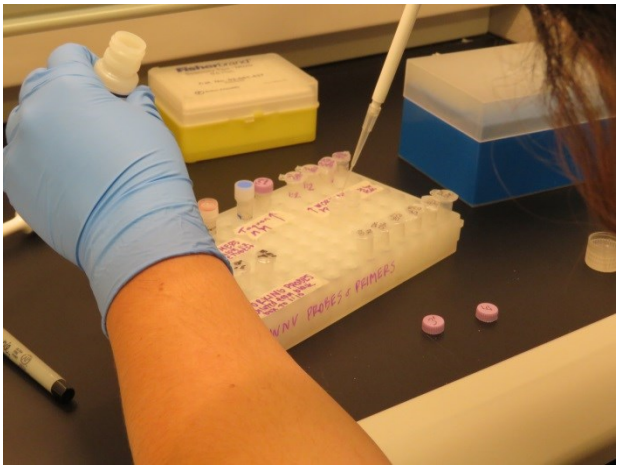
Dianna Hooker supervises the West Nile Virus/Mosquito research. She is a mathematics instructor at CDKC and has 35 years' experience working at a tribal college. Dianna has worked at 4 different higher education institutions, including CDKC, LBHC, MSU-Billings and MSU-Bozeman. She earned a Bachelor's of Science degree in Earth Science-Geology (1983) and Mathematics (1985), then went on to earn a Master's of Science degree in Mathematics (1994). In 2010 she completed her Doctorate of Education in Curriculum and Instruction from Montana State University in Bozeman.





Once we have identified the mosquitoes that are carriers of the West Nile Virus we prepare them for testing using state of the art technology and equipment. Isolating and preparing mosquito RNA for analysis in our Q-PCR machine. Testing and detection of the West Nile Virus is done by transforming mosquito RNA into DNA and then replicating the DNA into measureable quantities for analysis.





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Analysis of the samples involves scientific methods such as: maceration of mosquitoes (we call it making "Mosquito Smoothies") titration, centrifuging, Q-PCR, and computer. Most of our laboratory work is done in full protective gear to protect our samples from being infected by our own DNA. Students learn procedures, protocols, techniques, and are trained to operate the scientific equipment that is used in labs by professional researchers.

406-477-6215

Ext-139 Dianna Hooker

Student Opportunity

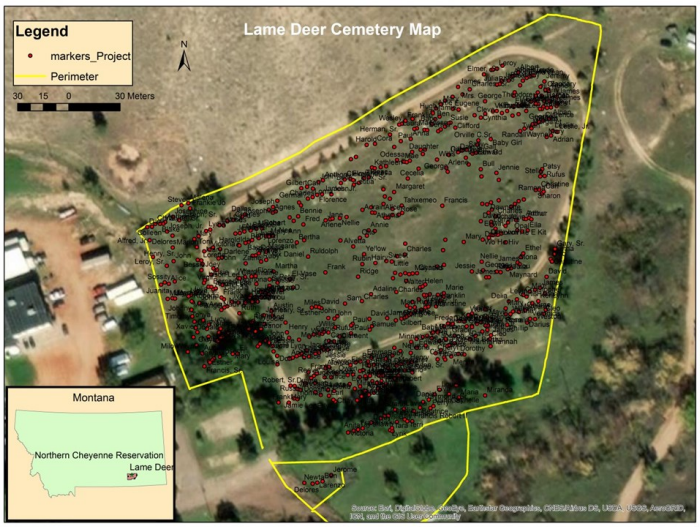
GIS/GPS Systems

GIS (Geographic Information Science) is the technology used for making maps with a computer. It uses data collected from the physical world to make models of the surface of the Earth. Data collection technologies include GPS, unmanned aerial vehicles (UAVs), fixed wing drones and satellites. This data is the foundation for maps that can be used for analysis of vegetation, crops, forests, mining, transportation and cities. GIS maps show the location of things on the surface of the Earth and they can also show the relationships between things on the Earth. GIS can be used to show things that are too close together or too far apart. GIS can also be used to show if there is too much or too little of something in an area. As part of GIS information from drone or satellite pictures can be analyzed to show the health of vegetation or crops. GIS skills are useful in any area that needs to know the location of things on the surface of the Earth. This could include Agriculture, Forestry, Realty, Roads, Mines, Utilities, Scientific Research, Fire Protection and EMS. The state of Montana even uses GIS for assessing and collecting taxes. Any field of study that needs to know "Where?" will find GIS skills and knowledge essential.

Preparing Fixed Wing Drone for data collection flight

Student gathering location data

Student processing GIS data into map

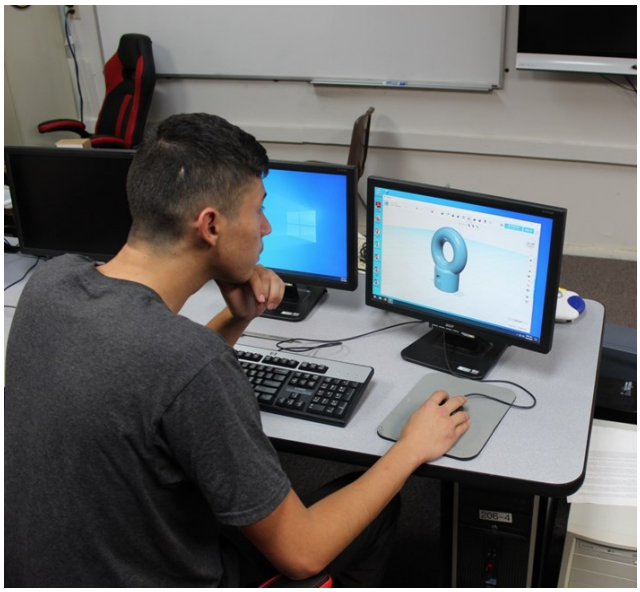


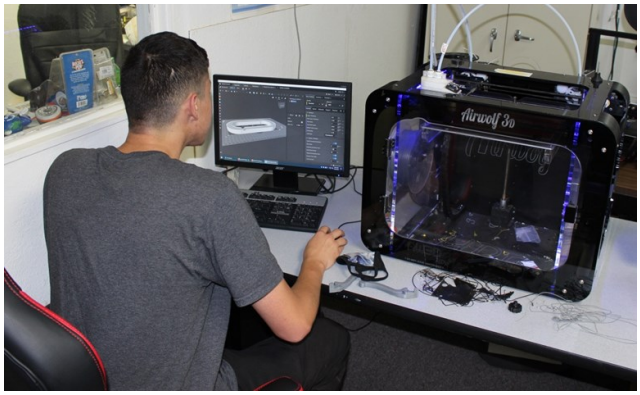
Presentation map of data points over satellite image

3-D Printing

Think It...Build It

Student Opportunity

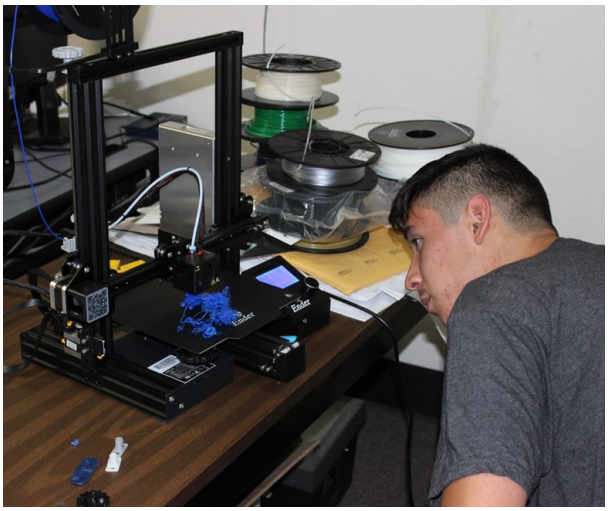




3-D printing allows designers to create physical objects in plastic from computer drawings. In industry this process is called rapid prototyping. Students gain exposure to various types of rapid prototyping and develop skills in designing objects through the use of Computer Aided Design and 3-Dimensional Modeling software. They will then be able to convert their ideas into solid, physical objects.

The main tool for doing this is 3D Design and Modeling software. Designs are often shared with other printers through web sites such as *Thingiverse*.

The Designs must be prepared for printing with Slicer software that is customized for each print and each printer. There are many parameters that must be set to achieve a successful print.



Even with a good design and careful setup in the Slicer software things can go wrong with the print. The printer must be watched throughout the printing process to avoid wasting materials by stopping the print if something should go wrong. 3D printing is a rapidly growing field. Every month new and better printers become available. At the same time the cost of these machines gets lower. The lower costs make 3D printing affordable for an expanding array of industries. New uses for 3D printed products come on a daily basis. Dentures, prosthetics and safety equipment are things that are now commonly 3D printed. The market for people with 3D printing skills and knowledge is only going to expand.

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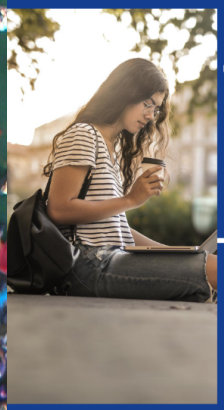

THE BEST TIME FOR NEW BEGINNINGS ..... IS NOW

This is the year to define your education. Whatever is holding you back, CDKC wants to help you overcome. Your issues are our issues. Transportation, old debts, suspensions, childcare, income barriers.... This is the year that we conquer them together.

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