# CNAS 2020 Annual Report
July 13, 2021
Tammy Jahnke, Dean

The CNAS Strategic Plan and Annual Goals document is updated each year (June-September) but is driven by our vision, mission and shared values.

**Mission** - The College of Natural and Applied Sciences develops global citizen scholars who are prepared to increase understanding of the natural world and applied sciences within society and to be productive and successful in their careers.

**Vision** - The College of Natural and Applied Sciences at Missouri State University seeks excellence in teaching, scholarly productivity, and professional and community service.

**Shared Values** - We value

- our students and their success;
- active learning, academic rigor and critical thinking;
- excellence in teaching, research and service;
- inclusiveness, fairness and justice;
- faculty, staff and administrators;
- personal and academic integrity;
- safe learning environments;
- collaborations and partnerships; and
- continuous improvement.

The annual report is structured around a set of college goals which are tied to the university long range plan and annual goals. All college annual reports are posted on the college website - http://science.missouristate.edu/College-Annual-Reports.htm. All department annual reports which include assessment reports are posted on a password protected website – Go to http://science.missouristate.edu/restricted/assessment.htm and click on assessment and reports. As we transition in 2021 to a SEM Plan adopted in December of 2020 and a new LRP adopted in summer of 2021 our goals will be restructured in the future.

**Program Review/Accreditation/Action Plans Update –**

**Biology** – Action Plan accepted March of 2016. The new BSFS is complete and dedicated. We are moving forward to plan for full utilization. External funding for GA's is increasing (7.5 funded for AY and eight funded for summer). Next self-study due June 1, 2022 so the department will begin their self study immediately.
**Chemistry** –Action plan accepted June of 2018. Smooth transition to a new department head. Graduate students are back doing office hours at Bear Claw to partner on tutoring. Next self-study due 2024
**Computer Science** – Accredited through September 30, 2021. We will hear from ABET in July/August of 2021 regarding future. Department seeing significant growth in MS program. CSC RPT Policy review will take place by Feb 2022.
**Geography, Geology & Planning** – Action Plan accepted Spring of 2017. Although ending the accreditation for the planning major we have seen an increase in graduates over the last four years (an average of 10/year). In addition we have a new small town planning and development certificate that has

been successful (12 completions last year). With a new director of planning starting in summer of 2021 I expect even higher numbers. Next self-study due June 1, 2023

**Hospitality Leadership** – Accreditation through summer of 2025. Primary action has been to hire outstanding faculty. The entire BS and BAS programs are online. The HL RPT Policy was reviewed and submitted for approval. Hospitality students often complete more than one BS program and more than one certificate program within the unit. The number of degrees and certificates awarded has increased from 300/year to nearly 500/year!

**Cooperative Engineering Program** – ABET Accredited through Missouri S&T and the ABET visit was in December of 2020. Official notification of renewed accreditation will occur in later summer of 2021. Mechanical engineering is now offering first, second and third year course work to all students. Construction of phase II of renovations is complete and a recognition of donors will occur on September 9, 2021.

**Mathematics** – Action Plan accepted in spring of 2018. The department hired two women into tenure track faculty positions in the last two years, increasing gender diversity within the department. The faculty continue to work on student success strategies for all MOTR classes. Student success for individual courses were difficult during the pandemic in math and throughout the college. Next self-study due 2024.

**Physics, Astronomy & Materials Science –** Action plan accepted in summer of 2017. A major renovation in Kemper Hall is complete and has allowed for research collaboration between PAMS and CHM. Next self-study is due 2024**.**

## Academic Profile

- CNAS – Enrollment data, graduation data and percentage of students graduating have been reviewed by college leaderships. This past year has been very, very unusual as we have experienced the pandemic in a variety of different ways. It is good to see most numbers steady and we are focused on recruitment and retention now that we are coming out of the pandemic.
    - Table of CNAS majors – Appendix 1, page 11
    - Table of CNAS graduates – Appendix 2, page 12
    - Percentage of students graduating – Appendix 3, page 13
- CNAS added new certificates that support workforce development. All certificate programs requiring no prerequisites are labeled. We have jumped from 115 certificate completions last year to 176 in the current year. There is potential for so much more so we continue to encourage students to enroll in the programs.
    - Table of certificate programs – enrollments and completions – Appendix 4, pages 14-15
- Computer Science – 26 MS graduates completed the program over the past two years and enrollment is strong.
- Science teacher education students have all transitioned from the BSED to the MAT program. We will be deleting SCI undergraduate courses this year. There are currently 15 students taking courses in the MAT program or who have recently completed licensure to teach in the state of Missouri. There are 30 undergraduate students in the pipeline preparing for the MAT in science and we are able to track/advise/prepare these students. BSED graduates in MTH were up to six this year. We will be focusing on recruitment of STEM teachers this year through strategies being developed for an NSF Noyce grant and more.
- Barrier Removal – Provost funded three DFW projects in CNAS – MTH, CSC and CHM in 2020. These projects were just getting started as the pandemic started. CSC developed a variety of new assignments for 100 level coursework that helped to align all sections. This work continues and we will monitor student success through this development. MTH spent extra attention on MTH134 to ensure students success. This work continues and we will monitor student success. CHM spent extra time working on a plan to improve student success in organic chemistry. Once

again the pandemic interrupted the plan. This will now continue and we will monitor student success. MTH has a new project involving MTH103. BIO is working on a plan for genetics.

- CNAS continues to work closely with OTC. All OTC biology students visit Temple Hall each semester. MSU biology and chemistry TA's continue to work at OTC.
- The PSM track of the MNAS has continued to see growth and placement in internships has increased.
- The CNAS Office of Student Success staff began teaching CNAS sections of GEP101. This was successful and will continue.

**Student Experience**

- All student accomplishments are documented in our CNAS News Blog. A listing can be found in appendix 10, pages 21-22.
- Fifteen CNAS faculty and staff have been trained in proactive advising since 2018. Because this is valuable information another cohort will be trained in 2021. Proactive advising is primarily done by staff advisors in CNAS – not the individual faculty trained.
- The 2020 CNAS undergraduate research day was postponed to fall 2020 and was virtual. We had 13 students participate. In spring of 2021 we had 50 students participate in the virtual research symposium.
    - Publications and publications/presentation with student co-authors - Appendix 5, pages 16-17
- Online student evaluation of faculty through Blackboard will continue in CNAS.
- A student expo is held each fall semester to recruit new members into the various CNAS student organizations and the leaders of student organizations within CNAS meet with Dean's staff on a regular basis.
- It is still clear that the common application for foundation scholarships is not user friendly and that students are not applying for this money so CNAS offered sessions to help students apply. Students still struggle with the application for foundation scholarships but this year we distributed over $174,000 in foundation scholarships. CNAS will recognize all recipients on a website, in a press release and in newsletter.
    - Scholarship dollars distributed – Appendix 6, page 18

**Diversity and Inclusion**

- CNAS has an active diversity committee. The committee submitted a long-range plan. Several items were included in the CNAS action plan for 2020-2021 including reviewing RPT policies, updating the website and providing more training for search committees in CNAS.
- One CNAS goal has been - seek grant funding. A list of funding opportunities has been updated and is posted on our website - Grants & Other Opportunities - College of Natural and Applied Sciences - Missouri State University
    - Dr. Tayo Obafemi-Ajayi is leading the NSF funded Mo LSAMP program at MSU - https://science.missouristate.edu/lsamp/
    - Dr. Matt Pierson is currently leading the NSF STEM Scholars program at MSU - https://sstem.missouristate.edu/
    - Dr. Einhellig, Dr. Rebaza and I received NSF funding for an Advance program at MSU - https://science.missouristate.edu/ADVANCE.aspx We are finishing the second year of our project and have collected and analyzed quantitative and qualitative (focus groups) data from

12 STEM departments across three colleges. Our next steps are to pilot some equity strategies in 2021-2022 AY and to develop a 5-year equity strategic plan.

- CNAS submitted a preproposal to the HHMI Inclusive Excellence program early this year, which was unfortunately declined. We plan to reapply in the next call for proposals.
- We will investigate Math/Science Upward Bound grant in 2021 and a McNair grant in 2022.

- A goal has been to bring in more diverse seminar speakers and most of the departments have done a great job with this. We need to continue to do this.

- We are supportive of inclusive learning practices. Several CNAS faculty attended the Humanity of Inclusive Practices course 2020. Showcase speakers have also focused on inclusive teaching practices.
- Two faculty in CNAS are involved with GREAT - **Globally Responsive Education and Teaching -** Xiaomin Qiu and Kyoungtae Kim have been very active with **GREAT**, an initiative launched by International Leadership and Training Center, Office of China Programs, and Faculty Center for Teaching and Learning to promote dialogues and discussions on the internationalization of curriculum and instruction.
    - link for the videos about teaching international students online - https://international.missouristate.edu/great.htm
    - Interested in a framework of developing an active online courses for international students - https://p-zhang.com/framework-for-the-development-of-active-and-reflective-online-course-for-international-students/

## Globalization

- CNAS faculty lead study-away programs for students.
- We continue 3+1 programs with Chinese universities and work with the MSU China Programs office.
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## Infrastructure

- BSFS educational facility dedication occurred in June 2021.
- Phase II of mechanical engineering renovations are complete.
- CNAS Master Planning study is complete. A plan for external fund is in progress. Architects will be hired soon..
- The college implemented a college fee starting in fall of 2019. Funds are used to support student success staff and infrastructure improvements.

## Research

- The college distributed over $10,000 in incentives to faculty for submitting grants requesting in excess of $30,000. These dollars are transferred to departments for faculty to use for travel or research expenses.

- Sponsored Research Activity as of June (annual report not yet available) – See BOG June Agenda page 301
    - 7/48 total staff submitting grants are from CNAS
    - 42/111 faculty submitting grants are from CNAS (38%)
    - 7/41 total staff awarded grants are from CNAS
    - 28/78 faculty awarded grants are from CNAS (36%)
    - 134/403 submissions were from CNAS (33%)
    - 82/308 awards are from CNAS (27%)
    - Overall CNAS has only 17% (127/742) of the faculty at MSU

- The college currently has allocated over $2 million (one-time dollars) for start-up funds for tenure track faculty over the past six years. In addition, summer fellowships for newly hired tenure-track faculty are funded with one-time funds in the college. The start-up funds are typically spent within the first three years of a faculty member's time on campus. By year four many have external funding.

**Funding**

- CRPM and OEWRI are totally self-funded. Both centers have funding to meet current staffing needs and the demands of southwest Missouri.
- It is clear from the data (grants submitted/received and publications) that CNAS has the strongest culture of research/scholarly activity at Missouri State University.

**Partners for Progress**

- Continue to work with community colleges
- Continue collaborations with K-12 schools and science/math competitions
- Continue collaborations with National Park Service, USGS and others
- MSU remains the host institution in Missouri for Project's WET, WILD and Learning Tree – although this is a current challenge for us
- Continue hosting regional science fair and science Olympiad and Pummill Relays.
- Continue to support GLADE, a summer camp for science students
- Continue to partner with Springfield-Greene County Library on projects
- Continue to partner with Discovery Center, Dickerson Park Zoo, Department of Conservation and others on projects.
- HL faculty engaged with Missouri ProStart Schools
- CRPM and OEWRI continue to work with city, county and area communities.

**Valuing and Supporting People**

2021 Promotions

- Promoted to Distinguished Professor
    - Nick Gerasimchuk – CHM
    - Mike Reed - PAMS
- Promoted to Associate Professor with tenure
    - Matt McKay – GGP
    - Tayo Obafemi-Ajayi – EGR/CSC

    - Fei Wang – CHM
    - Keiichi Yoshimatsu - CHM
- Promoted to Senior Instructor
    - Angela Plank - BIO
    - Tina Hopper - BIO

Missouri S&T Promotions

- Promoted to Associate Teaching Professor
    - Theresa Odun-Ayo (2020)
- Promoted to Teaching Professor
    - Jeff Thomas (2021)
    - Ryan Hutcheson (2021)

CNAS currently has fourteen distinguished professors (thirteen active and one retired).

**University Award Winners - 2021**

Gary Meints

- Board of Governors Excellence in Public Affairs Award (2021)

Kevin Evans

- Excellence in Community Service Award
- Board of Governors Excellence in Public Affairs Award (2020)

Kyoungtae Kim

- Outstanding Thesis Advisor 2021

Albert Barreda

- FCTL Diversity Scholar

Kimberly Van Ornum

- Certified Distance Educator

✓ CNAS established a new awards process in 2011 for faculty and staff to recognize outstanding work. First awards given in May of 2012 and listed below are the 2021 award winners based on their 2020 performance.

- **Atwood Research and Teaching Award**
    - Razib Iqbal – Computer Science
- **CNAS Excellence in Teaching Award Winners**
    - Natasha DeVore – Chemistry
    - Krista Evans – Geography, Geology and Planning
    - Tina Hopper - Biology
    - Babur Mirza - Biology
    - Yoshimasa Kageyama – Hospitality Leadership
    - Kyoungtae Kim - Biology
- **CNAS Excellence in Service Award Winners**
    - Brian High – Chemistry
    - Sean Maher - Biology
    - Kevin Mickus – Geography, Geology and Planning
    - Angela Plank – Biology

        - Songfeng Zheng - Mathematics
    - **CNAS Excellence in Research Award Winners**
        - Deb Finn – Biology
        - Day Ligon – Biology
        - Gary Michelfelder – Geography, Geology and Planning
        - Songfeng Zheng - Mathematics
    - **Faculty/Staff Excellence Awards—Student Nominated, Student Selected**
        - Jeff Brannon – Computer Science (per course)
        - Krista Evans – Geography, Geology and Planning
        - Bradley Mills – Physics, Astronomy and Materials Science
        - Katie Tucker – Hospitality Leadership
    - **CNAS Excellence Awards – Staff**
        - Mike Murphy – CNAS
        - Craig Baird - CNAS

<u>NEW 2021 CNAS Faculty – tenure-track</u>

- Daniel Moreno – Mechanical Engineering (BEng – The Cooper Union for the Advancement of Science and Art; MS and PhD – Georgia Institute of Technology) post-doc University of Kentucky
- Tuhina Banerjee – Chemistry (BS and MS – Banaras Hindu University, India; PhD – India Institute of Technology, Bombay) Post-docs – Wayne State, Central Florida and Pittsburg State.
- Mukulika Ghosh – Computer Science (BS – National Institute of Technology, India; MS and PhD – Texas A&M University) post-doc – University of Maryland
- Tasnuba Jerin - GGP (BS and MS – University of Dhaka, Bangladesh; PhD University of Kentucky) post-doc – University College Dublin, Ireland

All departmental accomplishments are noted in departmental reports available on CNAS website.

## Executive SWOT Summary

2020-2021 will be a year that we will not forget as the global pandemic will affect us for years to come.

Goals that we continue to work on -

SEM Goals are always at the forefront of CNAS goals. We review data on a regular basis.

CNAS Master Plan – The CNAS Master Plan is complete and we are now working with the foundation and president to raise funds for the addition and renovation of Temple Hall.

Strengths – Faculty/student research; excellence in teaching by many, many faculty; external funding (funding is up); instrumentation and facilities; and outstanding students. Teaching facilities continue to improve.

Weaknesses – Many teaching facilities in science and math remain dated; need for more research space in the sciences – especially if we are to increase the number of STEM graduates. With dated science labs and facilities – recruitment is more difficult! The Master Plan has been designed to identify renovation needs as well as new space needs for CNAS.

Opportunities – External funding opportunities in the sciences; PSM program; strategic uses of online education in all units. Graduate programs in the college could grow significantly with additional assistantships, faculty and space. HL is working aggressively to market their newly developed programs. The CNAS College Fee is opening the door to renovate and add space to the college although as noted above it cannot do it all.

Threats – The pandemic. Lack of space for growth. Lack of recurring funding for service contracts on major instrumentation. Decrease in federal grant funding. Lack of outstanding STEM facilities impedes recruitment of students.

**Action Plan for 2021-2022 will be available in September**

**CNAS Summary of Assessment Update –**

Departmental annual reports from 2020 included assessment data and analysis. These reports are available upon request.

BIO – The department reviewed the following goal – explain the historical context of biological discoveries. Specific exam questions were written to address this learning outcome in BIO578. Eighty percent of the students got 80% (or more) of the questions correct. The department then identified four SLO's that could benefit from a global perspective and therefore link to the public affairs mission. The faculty were surveyed about classes that included a global perspective. The department learned that 95% of classes included at least one category of five of a global perspective. The department anticipates measuring these global perspective learning outcomes in the coming year.

CHM – The department tracked three different student learning outcomes from the previous several years. This year they chose a review of MFAT exam scores and subscores to review SLO #1. The department reviewed course grades for four different classes to measure proficiency in the use of appropriate instrumentation to collect and record data. The department reviewed course grades for three different classes to measure student awareness of the impact of chemistry on the environment, society and other cultures outside the scientific community. Overall the department met their goals except for the MFAT exam score. They have a plan to help students with this standardized exam.

CSC – The department has collected data on all SLO's and courses as required for their ABET accreditation. The results of the accreditation visit in 2019 resulted in a further report in 2020 with regard to accreditation. The results of the 2020 report will be available from ABET in August or September of 2021. A summary of the data collection as well as a table of which courses are used for the data analysis can be found in their report.

GGP – GGP began a new assessment program this year and then the pandemic started. The faculty spent a great deal of discussion and time ensuring that everyone was comfortable with the new teaching formats. Measurement of specific (only three) student learning outcomes in the coming year will be important for the department.

HL – A complete analysis of all learning outcomes was submitted. It was clear that COVID impacted some student learning outcomes. The faculty have reflected on the outcomes and will continue to measure SLO's this year to see if the impact continues. All assessments showed that students in the HL program have an outstanding preparation.

MTH – The math faculty focused on three assessments – MFAT exam results, a qualitative

assessment of the MTH core – MTH503, 532, 540, and graduate comprehensive exams. Faculty who teach MTH503, 532 and 540 were asked to reflect on the students' ability to write proofs and computational abilities. Student strengths and weaknesses were compiled. This information is now going to the departmental curriculum committee for course revisions as well as discussions about the prerequisite courses. All graduate students passed the comprehensive exam within two tries (all passed on the first attempt – except for one exam).

PAMS – The department used MFAT scores to measure SLO #1. The department used a revised rubric to measure students written and oral communication skills in PHY486. In addition to reviewing the rubric scores the departmental faculty had a discussion about the rubric. The department uses case studies to assess how students identify and apply ethical principles in their field of study.

Appendix 1 – CNAS Majors

| MAJORS - Academic Period (fall first census) | | Fall 2016 | Fall 2017 | Fall 2018 | Fall 2019 | Fall 2020 |
|---|---|---|---|---|---|---|
| Department | Student Level | Headcount Value | Headcount Value | Headcount Value | Headcount Value | Headcount Value |
| Biology | | 742 | 784 | 798 | 737 | 679 |
| | GR | 42 | 47 | 44 | 49 | 42 |
| | UG | 700 | 737 | 754 | 688 | 637 |
| Chemistry | | 225 | 207 | 198 | 226 | 204 |
| | GR | 23 | 19 | 21 | 25 | 19 |
| | UG | 202 | 188 | 177 | 201 | 185 |
| Computer Science | | 354 | 383 | 446 | 432 | 391 |
| | GR | 3 | 10 | 23 | 28 | 33 |
| | UG | 351 | 373 | 423 | 404 | 358 |
| Geography, Geology, & Planning | | 206 | 187 | 190 | 181 | 167 |
| | GR | 34 | 34 | 33 | 40 | 45 |
| | UG | 172 | 153 | 157 | 141 | 122 |
| Hospitality Leadership | | 239 | 234 | 210 | 277 | 195 |
| | GR | 3 | 5 | 8 | 8 | 7 |
| | UG | 239 | 232 | 210 | 269 | 188 |
| Mathematics | | 170 | 178 | 177 | 148 | 152 |
| | GR | 25 | 31 | 28 | 24 | 23 |
| | UG | 145 | 147 | 149 | 124 | 129 |
| Natural & App Sci/Engineering | | 173 | 173 | 202 | 260 | 291 |
| | GR | 0 | 0 | 0 | 0 | 1 |
| | UG | 173 | 173 | 202 | 260 | 290 |
| Physics, Astronomy, & Materials Science | | 86 | 72 | 83 | 79 | 73 |
| | GR | 21 | 15 | 15 | 24 | 14 |
| | UG | 65 | 57 | 68 | 55 | 59 |

Appendix 2 – CNAS Graduates for the past five years

| Fiscal Year (summer, fall, spring) | | FY2017 | FY2018 | FY2019 | FY2020 | FY2021 |
|---|---|---|---|---|---|---|
| Department | Headcount Value | Headcount Value | Headcount Value | Headcount Value | Headcount Value | Headcount Value |
| Biology | **Total** | **146** | **135** | **181** | **164** | **144** |
| | **GR** | 18 | 19 | 17 | 30 | 13 |
| | **UG** | 128 | 116 | 164 | 134 | 131 |
| Chemistry | **Total** | **33** | **37** | **32** | **41** | **50** |
| | **GR** | 8 | 8 | 8 | 7 | 10 |
| | **UG** | 25 | 29 | 24 | 34 | 40 |
| Computer Science | **Total** | **60** | **55** | **81** | **101** | **119** |
| | **GR** | 2 | 2 | 5 | 10 | 16 |
| | **UG** | 58 | 53 | 76 | 91 | 103 |
| Cooperative Engineering | **Total** | **33** | **31** | **36** | **32** | **39** |
| | **UG** | 33 | 31 | 36 | 32 | 39 |
| Hospitality Leadership | **Total** | **62** | **67** | **69** | **84** | **91** |
| | **GR** | 1 | 0 | 0 | 1 | 5 |
| | **UG** | 61 | 67 | 69 | 83 | 86 |
| Mathematics | **Total** | **42** | **41** | **29** | **34** | **31** |
| | **GR** | 12 | 11 | 6 | 9 | 9 |
| | **UG** | 30 | 30 | 23 | 25 | 22 |
| Physics, Astronomy, & Materials Science | **Total** | **27** | **19** | **15** | **13** | **21** |
| | **GR** | 11 | 11 | 5 | 7 | 11 |
| | **UG** | 16 | 8 | 10 | 6 | 10 |
| Geography, Geology, & Planning | **Total** | **78** | **57** | **59** | **91** | **81** |
| | **GR** | 26 | 10 | 12 | 28 | 21 |
| | **UG** | 52 | 47 | 47 | 63 | 60 |

Appendix 3

Percentage of students completing BS or MS degrees (no certificates) compared with total majors in 2017-2020 ranges

| Department | Overall % grads | BS % grads | MS % grads |
|---|---|---|---|
| **CNAS GOALS** | **25%** | **25%** | **50%** |
| Biology | 18.6-22.7% | 17.4-21.6% | 31.0-44.9% |
| Chemistry | 13.3-24.5 % | 12.4-21.6% | 20.0-52.6% |
| Computer Science | 15.7-30.4% | 14.9-28.2% | 35.7-48.4% |
| Cooperative Engineering | 12.3-17.8% | 12.3-17.8% | |
| GGP | 30.9-48.5 % | 29.1-49.2% | 36.4-76.5% |
| Hospitality Leadership | 19.7-46.7% | 19.7-45.7% | 71.4% |
| Mathematics | 16.4-23.6% | 15.4-20.4% | 21.4-39.1% |
| PAMS | 16.5-37.5% | 10.9-28.1% | 29.2-78% |

Percentages in 2019

| Department | Overall % grads | BS % grads | MS % grads |
|---|---|---|---|
| **CNAS GOALS** | **25%** | **25%** | **50%** |
| Biology | 20.8% | 19.0% | 44.9% |
| Chemistry | 13.3% | 12.4% | 20.0% |
| Computer Science | 16.2% | 14.9% | 35.7% |
| Cooperative Engineering | 12.3% | 12.3% | - |
| GGP | 30.9% | 29.1% | 37.5% |
| Hospitality Leadership | 19.7% | 19.7% | - |
| Mathematics | 23.0% | 20.2% | 37.5% |
| PAMS | 16.5% | 10.9% | 29.2% |

Percentages in 2020

| Department | Overall % grads | BS % grads | MS % grads |
|---|---|---|---|
| **CNAS GOALS** | **25%** | **25%** | **50%** |
| Biology | 21.2% | 20.6% | 31.0% |
| Chemistry | 24.5% | 21.6% | 52.6% |
| Computer Science | 30.4% | 28.2% | 48.4% |
| Cooperative Engineering | 13.4% | 13.4% | - |
| GGP | 48.5% | 49.2% | 46.7% |
| Hospitality Leadership | 46.7% | 45.7% | 71.4% |
| Mathematics | 20.4% | 17.0% | 39.1% |
| PAMS | 28.8% | 17.0% | 78.0% |

Appendix 4 – Certificate enrollments and graduation numbers

Enrollments –

| UNDERGRADUATE CERTIFICATES | | | | Spring 2019 | Spring 2020 | Spring 2021 |
|---|---|---|---|---|---|---|
| Certificate | Dept. | Credit Hours | Pre-reqs required?*** | Enrollment | Enrollment | Enrollment |
| Web Programming | CSC | 16 | | 30 | 48 | 43 |
| | | | | | | |
| Applied Geophysics | GGP | 12 | Yes | -- | -- | 1 |
| Applied Geospatial Science | GGP | 16 to 17 | No | -- | 5 | 9 |
| Engineering Geology | GGP | 13 | Yes | -- | 1 | -- |
| Environmental Geoscience | GGP | 13 to 14 | Yes | -- | 4 | 5 |
| Geographic Information Sciences | GGP | 16 | No | 5 | 19 | 17 |
| Geologic Foundations | GGP | 13 to 14 | Yes | -- | 1 | 11 |
| Globalization and Sustainability | GGP | 12 | No | -- | -- | 9 |
| Paleontology | GGP | 12 to 14 | No | -- | 4 | 1 |
| Petroleum Geology | GGP | 12 | Yes | -- | -- | 1 |
| Small Town Planning and Development (previously Planning and Development - #s have been combined) | GGP | 13 | No | 7 | 13 | 7 |
| | | | | | | |
| Food and Beverage Operations | HL | 15 | No | 72 | 56 | 64 |
| Essentials of Hospitality Management | HL | 12 | No | -- | -- | 46 |
| Lodging Management | HL | 14 | No | -- | -- | 11 |
| Advanced Hospitality Leadership | HL | 12 | No | -- | -- | 85 |
| | | | | | | |
| Computational Science | PAMS | 18 | Yes | -- | -- | 9 |
| **GRADUATE CERTIFICATES** | | | | | | |
| Data Science | CSC | 12 | | -- | 4 | 3 |
| | | | | | | |
| Environmental Monitoring and Sampling | GGP | 12 | Yes | 6 | 4 | 6 |
| Geospatial Information Sciences | GGP | 12 | No | 5 | 11 | 11 |
| Petroleum Geology | GGP | 12 | Yes | -- | -- | -- |
| Planning and Development | GGP | 13 | No | 1 | -- | 1 |
| Sustainability | GGP | 12 | No | -- | -- | 4 |
| | | | | | | |
| Hospitality Administration | HL | 12 | No | 6 | 8 | 4 |
| **INTERDISCIPLINARY PROGRAMS - UNDERGRADUATE** | | | | | | |
| Conservation Law Enforcement | BIO/CRM | 18 to 19 | No | -- | -- | 10 |
| Environmental Education | BIO/GGP | 14 to 16 | No | 7 | 4 | 5 |
| Foundations of Pharmaceutical Science | CHM/BIO/BMS | 16 to 18 | | 10 | 37 | 39 |
| **INTERDISCIPLINARY PROGRAMS - GRADUATE** | | | | | | |
| Science Content | BIO/CHM/GGP/PAMS | 18 | | -- | -- | -- |

Data only reflects students whose main college is CNAS and does not reflect those students from other colleges.

Certificate Completions

| UNDERGRADUATE CERTIFICATES | | | | FY18 | FY19 | FY20 | FY21 |
|---|---|---|---|---|---|---|---|
| Certificate | Dept. | Credit Hours | Pre-reqs required?*** | Completed | Completed | Completed | Completed |
| Web Programming | CSC | 16 | | -- | 31 | 29 | 36 |
| | | | | | | | |
| Applied Geophysics | GGP | 12 | Yes | -- | -- | -- | -- |
| Applied Geospatial Science | GGP | 16 to 17 | No | -- | -- | 1 | 5 |
| Engineering Geology | GGP | 13 | Yes | -- | -- | -- | 1 |
| Environmental Geoscience | GGP | 13 to 14 | Yes | -- | -- | -- | 2 |
| Geographic Information Sciences | GGP | 16 | No | 6 | 1 | 3 | 6 |
| Geologic Foundations | GGP | 13 to 14 | Yes | -- | -- | -- | 8 |
| Globalization and Sustainability | GGP | 12 | No | -- | -- | 2 | 3 |
| Paleontology | GGP | 12 to 14 | No | -- | -- | 1 | 2 |
| Petroleum Geology | GGP | 12 | Yes | -- | -- | -- | 1 |
| Small Town Planning and Development (previously Planning and Development (PLDV) - #s have been combined) | GGP | 13 | No | 4 | 11 | 13 | 4 |
| | | | | | | | |
| Food and Beverage Operations | HL | 15 | No | 37 | 26 | 30 | 30 |
| Essentials of Hospitality Management | HL | 12 | No | -- | -- | -- | 10 |
| Lodging Management | HL | 14 | No | -- | -- | -- | 1 |
| Advanced Hospitality Leadership | HL | 12 | No | -- | -- | -- | 22 |
| | | | | | | | |
| Computational Science | PAMS | 18 | Yes | -- | -- | -- | 3 |
| **GRADUATE CERTIFICATES** | | | | | | | |
| Data Science | CSC | 12 | | -- | 1 | -- | 2 |
| | | | | | | | |
| Environmental Monitoring and Sampling | GGP | 12 | Yes | 3 | 3 | 10 | 4 |
| Geospatial Information Sciences | GGP | 12 | No | 10 | 6 | 6 | 11 |
| Petroleum Geology | GGP | 12 | Yes | -- | -- | -- | -- |
| Planning and Development | GGP | 13 | No | -- | -- | -- | 1 |
| Sustainability | GGP | 12 | No | -- | -- | -- | 1 |
| | | | | | | | |
| Hospitality Administration | HL | 12 | No | -- | 3 | 1 | 5 |
| **INTERDISCIPLINARY PROGRAMS - UNDERGRADUATE** | | | | | | | |
| Conservation Law Enforcement | BIO/CRM | 18 to 19 | No | 1 | 4 | 8 | 2 |
| Environmental Education | BIO/GGP | 14 to 16 | No | 5 | 10 | 4 | 2 |
| Foundations of Pharmaceutical Science | CHM/BIO/BMS | 16 to 18 | | -- | 5 | 7 | 14 |
| **INTERDISCIPLINARY PROGRAMS - GRADUATE** | | | | | | | |
| Science Content | BIO/CHM/GGP/PAMS | 18 | | -- | -- | -- | -- |

| Total Certificates Awarded | | | |
|---|---|---|---|
| FY18 | FY19 | FY20 | FY21 |
| 66 | 101 | 115 | 176 |

Appendix 5 – Peer-reviewed publications and publications/presentations with student co-authors

| Calendar Year | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|
| | #Contributions | #Contributions | #Contributions | #Contributions | #Contributions |
| Department | Value | Value | Value | Value | Value |
| | | | | | |
| BIO | 29 | 31 | 27 | 26 | 34 |
| CHM | 9 | 13 | 17 | 21 | 23 |
| CSC | 2 | 3 | 16 | 5 | 6 |
| EGR | 0 | 1 | 5 | 1 | * |
| GGP | 15 | 17 | 22 | 16 | 18 |
| HL | 5 | 4 | 6 | 7 | 10 |
| MTH | 8 | 12 | 17 | 7 | 15 |
| PAMS | 26 | 28 | 28 | 19 | 24 |
| Total by COLUMNS | 94 | 109 | 138 | 102 | 130 |

*The engineering publications are counted within departments earning tenure.

| Year | 2020 |
|---|---|
| | #Contributions |
| College | Value |
| Agriculture | 5 |
| Arts & Letters | 72 |
| Business | 69 |
| Education | 37 |
| Health & Human Services | 52 |
| Humanities & Public Affairs | 52 |
| Library Science, Department of | 2 |
| Natural & Applied Sciences | 121 |
| Total by COLUMNS | 410 |

The tables below indicate the number of students listed as co-authors of publications and presentations.

2020 data

| | Publications | | Presentations | |
|---|---|---|---|---|
| | Undergraduate | Graduate | Undergraduate | Graduate |
| **Department of Biology** | **3** | **14** | **33** | **66** |
| **Department of Chemistry** | **12** | **16** | **8** | **11** |
| **Department of Computer Science** | **0** | **6** | **0** | **0** |
| **Department of Geography, Geology, and Planning** | **2** | **5** | **3** | **24** |
| **Department of Hospitality Leadership** | **0** | **5** | **1** | **0** |
| **Department of Mathematics** | **1** | **1** | **0** | **0** |
| **Department of Physics, Astronomy, and Materials Science** | **5** | **3** | **7** | **5** |
| **Engineering Program** | **0** | **0** | **0** | **0** |

2019 data

| | Publications | | Presentations | |
|---|---|---|---|---|
| | Undergraduate | Graduate | Undergraduate | Graduate |
| **Department of Biology** | **5** | **11** | **53** | **96** |
| **Department of Chemistry** | **7** | **18** | **8** | **8** |
| **Department of Computer Science** | **2** | **3** | **0** | **0** |
| **Department of Geography, Geology, and Planning** | **3** | **10** | **35** | **48** |
| **Department of Hospitality Leadership** | **0** | **4** | **3** | **0** |
| **Department of Mathematics** | **3** | **1** | **0** | **0** |
| **Department of Physics, Astronomy, and Materials Science** | **5** | **0** | **7** | **0** |
| **Engineering Program** | **0** | **0** | **0** | **0** |

Appendix 6 - Scholarship Dollars Distributed

2020-2021 scholarship numbers (these are endowed scholarships with the foundation)

| Department Scholarship #'s | Scholarships Awarded | Total Award Amount |
|---|---|---|
| Biology | 18 | $9,000.00 |
| Chemistry | 32 | $37,825.00 |
| CNAS- Biology/Chemistry Joint | 2 | $2,000.00 |
| College of Natural and Applied Science | 34 | $26,500.00 |
| Computer Science | 18 | $10,054.12 |
| Geography, Geology & Planning | 17 | $16,700.00 |
| Hospitality Leadership | 31 | $28,550.00 |
| Mathematics | 36 | $34,700.00 |
| Physics, Astronomy & Materials Science | 11 | $9,160.00 |
| **TOTALS:** | 189 | $174,489.12 |

2019-2020 scholarship numbers (these are endowed scholarships with the foundation)

| Department Scholarship #'s | Scholarships Awarded | Total Award Amount |
|---|---|---|
| Biology | 12 | $6,244 |
| Chemistry | 28 | $31,850.00 |
| CNAS- Biology/Chemistry Joint | 2 | $2,000.00 |
| College of Natural and Applied Science | 40 | $39,600.00 |
| Computer Science | 14 | $8,183.30 |
| Geography, Geology & Planning | 8 | $10,200.00 |
| Hospitality Leadership | 15 | $10,600.00 |
| Mathematics | 36 | $37,380.00 |
| Physics, Astronomy & Materials Science | 13 | $18,000.00 |
| **TOTALS:** | 168 | $164,057.30 |

Appendix 7 – CNAS Faculty/Staff

| 2020 (FA) | Tenured/tenure-track Faculty in CNAS | Instructors/Lab supervisors |
|---|---|---|
| **BIO** | 18.0 FTE<br>17.5 FT + Head | 5/0 |
| **CHM** | 16 FTE<br>15.5 FT + Head | 2/1 |
| **CSC** | 8.5 FTE<br>8 FT + Head | 0/0 |
| **GGP** | 16.5 FTE<br>16 FT + Head | 4/0 |
| **HL** | 6.5 FTE<br>6 FT + Head | 2/0 |
| **MTH** | 22 FTE<br>21.5 FT + Head | 10/0 |
| **PAMS** | 10.5 FTE<br>10 FT + Head | 1/1 |
| **EGR** | 6.5 FTE<br>2 FTE MSU, 4 + Director MO S&T | 1/1 (MSU) |

Appendix 8 – Credit Hour Production

Although number of majors and number of graduates are important, it is also important to note credit hour production.

| Calendar Year (SP/SU/FA) | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|
| | Credit Hours | Credit Hours | Credit Hours | Credit Hours | Credit Hours | Credit Hours |
| Agriculture | 14,156 | 16,245 | 16,892 | 16,357 | 15,844 | 15,653 |
| Arts & Letters | 97,399 | 102,112 | 103,230 | 104,554 | 101,958 | 100,281 |
| Business | 106,171 | 108,149 | 110,736 | 113,386 | 113,994 | 111,579 |
| Education | 37,001 | 39,031 | 40,799 | 40,511 | 42,271 | 42,978 |
| Health & Human Services | 87,506 | 90,905 | 93,661 | 93,251 | 90,741 | 89,517 |
| Humanities & Public Affairs | 82,330 | 84,578 | 86,056 | 83,522 | 77,281 | 74,373 |
| Library Science, Dept of | 118 | 104 | 79 | 55 | 66 | 70 |
| Natural & Applied Sciences | 89,271 | 95,135 | 93,825 | 90,697 | 86,819 | 82,685 |
| Undergraduate College/Provost | 9,175 | 9,697 | 9,544 | 9,047 | 8,062 | 8,011 |

| **Credit hour production (total)** | **CY2016** | **CY2017** | **CY2018** | **CY2019** | **CY2020** |
|---|---|---|---|---|---|
| Biology | 17,484 | 18,150 | 18,868 | 18,833 | 18,159 |
| Chemistry | 18,335 | 18,429 | 18,152 | 17,284 | 15,894 |
| Computer Science | 4,322 | 4,332 | 5,025 | 5,157 | 5,326 |
| GGP | 15,613 | 15,417 | 14,104 | 12,742 | 11,374 |
| Hospitality Leadership | 4,216 | 4,240 | 4,051 | 3,435 | 3,471 |
| Mathematics | 24,870 | 23,607 | 21,918 | 19,565 | 16,607 |
| PAMS | 8,888 | 8,337 | 8,325 | 8,361 | 9,052 |

Appendix 9 – TA/GA Allocations

| Department | FY19 TA Allocations | |
|---|---|---|
| BIO | $272,673 | Funds 25-30 TA's |
| CHM | $159,902 | Funds 14.5-17.5 TA's |
| CSC | $61,140 | Funds 6-7 TA's |
| GGP | $165,903 | Funds 15-18.5 TA's |
| HL | $18,342 | Funds 2 TA's |
| MTH | $130,460 | Funds 12-14.5 TA's |
| PAMS | $140,029 | Funds 12-15.5 TA's |
| MNAS | $48,912 | Funds 4.5-5.5 TA's |

Additional TA's are funded by external funds obtained by faculty and staff in CNAS.

Appendix 10 - Student Accomplishments in CNAS

**Student Accomplishments 2020**

**February 21, 2020** Brightening the horizon of the sciences through star research and female empowerment Kali Shoaf (PAMS Senior) attended the Conference for Undergraduate Women in Physics and received the title of "Best Physics" for her conference presentation. Shoaf works with Dr. Mike Reed.

**February 28, 2020** Fishing for results through aquatic ecosystem research Biology students Alexandria Beezel and Ethan Rutledge attended the 2020 Southern Division-American Fisheries Society and both presented their research. Both work in the lab of Dr. Quinton Phelps.

**March 5, 2020** Shaping biology research by the dozen Several biology students attended the Missouri Natural Resources Conference and presented their research.

**June 2, 2020** Breeding the bite for survival Ashley Gagnon (Biology graduate student) received the Howard McCarley Student Research Award from the Southwestern Association of Naturalists.

**June 5, 2020** Taking on a new role of teaching – CHM – Kameron Coates (Gautam Bhattacharyya - Advisor) – accepted teaching position in Willard

**June 9, 2020** Breaking down barriers to success (and absorption) – CHM – Jessica Bruer (Alan Schick – Advisor) – after interning with Sensient Technologies Corporation in St. Louis twice, Jessica has accepted a position with them after she graduates

**June 11, 2020** Making Waves in research and the sea – BIO – Liz Harris (Gigi Saunders - Advisor) – research and info about Caribbean Reef Expedition

**July 10, 2020** Building capabilities to reach greater results – PAMS – Sinjan Majumder (Dave Cornelison – Advisor) – while working on his thesis Sinjan built fabrication equipment that will offer the department new, clean deposition techniques.

**September 17, 2020** (Bio)sensing the body's demands – CHM – Megan Prado (Adam Wanekaya – Advisor) received the Dr. Matthew and Patricia Harthcock Chemistry Research Fellowship Award that will help fund her research on the usability of glucose biosensors.

**September 24, 2020** A summer of (mostly virtual) science – BIO – Multiple Students. David Fleshman (graduate student) presented a virtual poster during the Society of Freshwater Sciences Summer of Science meeting. Abby Harrison (undergraduate student) received a fellowship award from the SFS Instars program.

**December 8, 2020** Revitalizing rural communities – GGP – Krista Evans capstone students. Eleven GGP students contributed to a city planning effort to revitalize the Seymour, MO downtown area. The students won the 2020 American Planning Association Missouri Chapter Award for Outstanding Student Project for their efforts.