



CNU College of Pharmacy

Program Review 2011-2016

Self-Study Report

February 14, 2017

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GLOSSARY of terms and acronyms

AACP- American Association of Colleges of Pharmacy

ACPE-Accreditation Council for Pharmacy Education

APPE- Advanced Pharmacy Practice Experience

CANVAS – the learning management system used in the College since 2015

CAPE-Center for the Advancement of Pharmacy Education

Capstone- Assessment taken at the end of the P3 year

CAS-Clinical and Administrative Sciences Department

CE - Continuing Education

CHS – College of Health Sciences

CLOs-Course Learning Outcomes

CNUCOP- California Northstate University, College of Pharmacy

CNSU- California Northstate University

CoCuLOs-Co-Curricular Learning Outcomes

COM-College of Medicine

COP-College of Pharmacy

CPJE-California Pharmacy Jurisprudence Examination

CSI-Classroom Supplemental Instruction Support

CSUS- California State University, Sacramento

DEC- Dean's Executive Committee

DOCLINE- interlibrary loan system

EED-Education Experiential Department

ExamSoft- The on-line assessment software for administering exams

HPLC-High Performance Liquid Chromatography

IACUC-Institutional Animal Care and Use Committee

IBATs-Individual-Based Application Tests

ICATs-Individual Cumulative Assessment Tests

ILOs-Institutional Learning Outcomes

IPE-Interprofessional Education

IPPE-Introductory Pharmacy Practice Experience

IRATs-Individual Readiness Assurance Tests

IRB-Institutional Review Board

LLC- Learning Library Center

LPPK-Longitudinal Pharmacy Practice Knowledge Exam

Milestone - cumulative and comprehensive examination taken by P1 and P2s

MMI-Multiple Mini Interviews

NABP-the National Association of Boards of Pharmacy

NAPLEX -North American Pharmacist Licensure Examination

OAA-Office of Academic Affairs

OSA-Office of Student Affairs

OSCE-Objective Structured Clinical Examination

PAC-Preceptor Advisory Council

PBS-Pharmaceutical and Biological Sciences Department

PCOA-Pharmacy Curriculum Outcomes Assessment

PEC-President's Executive Council

PLO-Program Learning Outcomes (PAGE 16)

PRC-Longitudinal Laboratory Practicums

PRIDE- Student organization - Professionalism, Responsibility, and Involvement in my Dedication to Excellence

SAN- Storage area network

SI-Supplemental Instruction

SWOT Analysis-Strengths, Weakness, Opportunities, Threats

TBATs-Team-Based Application Tests

TBL-Team-Based Learning

TCATs-Team Cumulative Assessment Tests

TRATs-Team Readiness Assurance Tests

Turning Point- Clicker technology used in the classroom

UCD- University of California, Davis

WSCUC-Western Senior College and University Commission

1. Introduction

a) Context for the program review

As part of its efforts towards continual improvement of its programs, and to maintain accreditation with WSCUC - the Senior College and University Commission - California Northstate University has made a commitment to review its programs at least every five years. This review is of the 4-year PharmD program at the College of Pharmacy, California Northstate University (CNUCOP).

The last review of the PharmD program was completed in Fall 2011. That review covered relevant processes and data from the program's inception and first student intake in Fall 2008 up to and including Spring 2011; thus relevant data on three academic years (2008-9, 2009-10, and 2010-11) and three cohorts of students (the graduation classes of 2012, 2013, and 2014) were presented and evaluated.

The review team, who read the report and met faculty and staff during a campus visit in December 2011, identified a number of strengths and commended the College in particular for its commitment to implementing Team-Based Learning (TBL), for its approach to strategic planning, and for embracing and actualizing the concept of an outcomes-based assessment model. Areas identified by the review team for improvement or further development related to: (i) the heavy workload of hub coordinators, (ii) identification in the curriculum as to when, how and where students develop specific professional skills, (iii) validation and sustainability of the assessment initiatives, (iv) identification of Inter-Professional Education (IPE) opportunities, and (v) making better use of the mock pharmacy resource. The College embraced these recommendations, so that during the last five years each has been addressed.

The program review reported here covers new data for the time period from Fall 2011 through to Spring 2016, covering the last five academic years (from 2011-12 to 2015-16) and applicable data on six cohorts of PharmD students (the graduation classes of 2015 to 2020). Where it is helpful some data from the first program review and data on previous years and classes will be included for comparison purposes.

This program review uses data collected by *the Assessment Committee, the Office of Academic Affairs, the Office of Student Affairs and Admissions, and the institution's Office of Institutional Effectiveness* in order to facilitate data-driven decision making regarding strategic planning in general and curricular change more specifically. The program review self-study was ongoing throughout much of 2016, with department chairs, committees, faculty and staff, and college leadership collating and reviewing evidence and data compiled for a number of exercises, including various semester and annual reviews of curriculum, faculty, and student outcomes, Faculty Retreats, Boot Camps, evaluation of the Strategic Plan, Accreditation Council for Pharmacy Education (ACPE) site visits, or specifically for the program review itself.

The CNU **Program Review Handbook** has been used as a guide to structure this report. To orientate the reader a brief background to the College is provided first. Evidence about *program quality* is then presented, including material about (i) students, (ii) the curriculum and learning environment, (iii) student learning and success, and (iv) faculty. Evidence about the *viability and sustainability* of the program follows, and includes: (i) demand for the program, (ii) faculty resources, (iii) student support, (iv) information and technology resources, (v) physical resources and facilities, (vi) staff resource, and (vii) financial resources.

The Office of Academic Affairs has overseen the preparation of the report with the input of various faculty, either individually or through Committees, and the College leadership team. Additionally, a portion of the data provided in this report are drawn from the College's assessment plan and annual assessment reports since the previous review. Faculty has helped review data, made recommendations and generated action plans based on the results. Any curricular change suggestions have been implemented, with Faculty agreement, through the Curriculum Committee.

A Program Review Committee was convened to undertake the review and prepare the report, and included the following people: Dr. Hassell (Lead), Dr. Khansari, Dr. Cao, Dr. Pauli, Dr. T. Kreys, Dr. Atef, and Ms. Wilder, representing administration, the three main departments, faculty and staff respectively.

b) College background

The College received pre-candidate accreditation status from the Accreditation Council of Pharmacy Education (ACPE) in June 2008 and admitted its first cohort of students in fall the same year. Full accreditation status was awarded in June 2013 and continued for a second 2-year period in June 2015. The most recent site visit by the profession's accreditation body (ACPE) took place in October 2016. In February 2017 the College received notification that accreditation of the Doctor of Pharmacy program be continued for a further two years, up to June 30, 2019. See *Appendix 1* for summary of the College's accreditation history since the last review.

The first *Program Review* was completed in 2011, encompassing the first three academic years of the College's operation. Since then the College has evolved, such that there have been a number of key activities, events and developments that have helped shape the College (see *Appendix 2* for list of key milestones). These include, but are not limited to: development during 2012 of a College Strategic Plan; a partnership in 2013 with the Business School at Sacramento State University to offer a joint Executive MBA pathway for PharmD students; an expansion in physical facilities as a result of a campus relocation in 2014; changes in the leadership body; the introduction and/or revision of policies and procedures that have helped streamline various student and faculty processes, such as academic progression, promotion procedures, faculty evaluations and annual performance reviews. Revisions to the curriculum have occurred, and

expansion and development of IPPE and APPE sites, as well as student fraternities and organizations have followed as the student body has grown.

In May 2014 the COP moved from its original site in Rancho Cordova to a larger facility in Elk Grove. The Elk Grove Academic Center houses the College of Medicine and the College of Pharmacy, and includes five large classrooms, eight laboratories, a library, 16 study rooms, a cafeteria, and various offices and resources, such as Human Resources, Institutional Effectiveness, Continuing Education, Admissions, Financial Aid, Student Affairs, Alumni Relations, and IT.

In August 2015, a new Dean assumed responsibility as the chief academic officer for the College, replacing the second Dean who served the College between June 2012 and March 2015. New Deans have ushered in a number of changes in the College's organization, structure and governance, policy and procedures, communication, and long-term vision. The present Dean re-structured the College so that there are now three separate departments, each with their own budget. There are two academic departments: the Clinical and Administrative Sciences (CAS) Department, and the Pharmaceutical and Biological Sciences (PBS) Department; the third one is the newly formed Education Experiential Department (EED), which deals with students on rotations.

Still ongoing, the College established an interdisciplinary education (IPE) initiative with the California State University, Sacramento (CSUS) School of Nursing in 2014 that involves students from our two programs in longitudinal experiences which includes using CSUS School of Nursing's high-fidelity simulation center. This is in addition to renovation of our own pharmacy simulation laboratory and development of IPE opportunities with the University's College of Medicine, which took its first class of medical students in 2015.

Other initiatives begun by the second Dean, and maintained by the present Dean, such as the College's Seed Grant program begun in 2012, have helped the Faculty establish and grow their research interests. Research aspirations and activity is helped and underpinned by the establishment in 2009 and continued development through the years, of appropriate governance procedures, including the formation initially of a College, but now a University-wide, Institutional Review Board (IRB) in 2011 and more recently the Institutional Animal Care and Use Committee (IACUC). A Scholarship and Awards scheme was established in 2009 and progressively enhanced in recognizing and rewarding faculty for their teaching, their research and scholarship, and their service to the College. A Summer Research Fellowship Program was also started in 2016 designed to encourage students to engage in research under the direction of a College faculty member. Two paid Fellowships, one clinical and one in basic science research, are offered for completion over the summer. A University Office of Research was established in 2016 and a Vice President of Research position followed. A contract has also been established with Antibodies Inc. for the use of their animal facility.

Since the last program review several Faculty have capitalized on research opportunities which exist around the scholarship of teaching, especially as it relates to Team-Based Learning (TBL),

the main pedagogy used by the College. Research collaborations with the University of California, Davis (UCD), have also bore fruit for Dr. Ruth Vinall, in the shape of two applications for NIH grants addressing health disparities among Asian communities. Other research currently being undertaken by faculty of the College include drug solubility studies focusing on improving the solubility of small molecules using solid and lipid dosage forms; some basic science research, including sphingolipid signaling pathway in cardiac fibrosis and remodeling, transdermal and sublingual drug delivery, and cell signaling pathways; and clinical sciences research, including the mining of large databases to enable cost effectiveness studies.

The current Dean is working to develop educational and scholarly collaborative relationships with the university and hospitals in Vietnam (so far we have signed 2 MOU). Furthermore the Dean has proposed several research Centers to capitalize on expertise and interests which exist among the Faculty. To date, funding has been provided for four different Centers:

1. Center of Excellence in Teaching and Learning (CETL) to support CNUCOP educational endeavor.
2. Center for Advanced Pharmacy Practice (CAPP) to support the newly developed responsibilities of the pharmacy profession, for e.g. medication therapy management, immunization, wellness programs
3. Center for Geriatrics and Wellness (CGW) to support the greying population in health and wellness
4. Center for Outcome Research (COR) to support the outcome data from the other centers as well as any research endeavors from faculty and any professional organizations in the community.


The Dean's Executive Committee (DEC) meets every week and is the main College body around which decisions are formulated and acted upon. The Faculty meet once a month to exchange information, discuss initiatives, and provide feedback on college and student related affairs. Annual evaluations of faculty started in 2008; they serve as a record of past achievements and provide an opportunity to review progress and develop short and long-term development plans; those plans are then used in the budget cycle to ensure funds are available to support professional development. Faculty receive development funds each year to support attendance at conferences, for research, or for other activities that enhance professional growth. Cadres of staff members from various departments, including those with academic support and those with operational support responsibilities, also participate in outside courses and workshops.


The College has embraced a role in public health, particularly service to at-risk populations and those with actual and likely compromised health literacy. Facilitated by our faculty, the College has implemented or participated in a number of health fairs and community outreach events. Students provide health education, medication management, CPR training; they participate in public health events (blood pressure screenings, flu vaccine clinics, drug abuse education, multicultural health fairs), leadership activities (serving as a Student Ambassador for a semester, serving as a student organization officer), and advocacy activities (participate in Legislative Day, meet with government officials to promote a current Rx bill, register voters on campus and inform voters of current Rx focus pros and cons, shadow a state or national professional association executive member). These events have become a significant part of the College's culture, with students often taking the leadership not only to implement such fairs, but also to cultivate relationships with various community partners. Our inaugural campus-wide health fair in October 2013 included participants from the *California State*

University-Sacramento (CSUS) School of Nursing, Rite-Aid, Walgreen's, Leader Pharmacies, University of the Pacific School of Pharmacy, Sacramento County Sheriff's Office Youth Services Division, Placer County Immunization Branch, Sierra Donors Services, Health Education Council, Anytime Fitness, Script Your Future, George McQueen and Associates Accounting Services, American Heart Association. Since the inaugural event, health fairs and outreach events have become regular features of the Colleges' co-curricular program, with students working towards achieving the program's co-curricular learning outcomes.

The development process for the Strategic Plan was initiated at a retreat in 2012 attended by faculty, administrators, student leaders, preceptors, and members of the University Board of Trustees. With the aid of a consultant, the group conducted a SWOT analysis and identified key impacts and seven key strategic initiatives to help ensure congruence between concurrent strategic planning initiatives by the COM and University. Subsequently a Chair was appointed for each strategic initiative, and a director was appointed to ensure integrity, continuity, and cogency of the entire plan and resultant document. The Dean at the time appointed all faculty and staff to one of the seven strategic initiative workgroups under the direction of that workgroup's chair. Each workgroup included at least two PharmD students and two preceptors. Each group worked to adjudicate goals, strategies, tactics, timelines, persons' responsible, and the resources needed to meet the goals. Upon completion of the plan, the faculty reviewed the entire document to resolve any differences and vote on each component of the document. Staff also were provided a copy of the document for their input. The Strategic Plan was then voted on, approved by the President's Executive Council (PEC) and the CNU Board of Trustees, and formally published in 2014 (see below for Statements of the Mission, Vision and Goals) .

CNUCOP Mission, Vision, and Goals: 2014-2019

COP Mission and Vision
<p>To advance the science and art of pharmacy</p> <p>To innovate active learning strategies in educating students and practitioners, advance the practice of pharmacy, and improve the health of Californians, and beyond</p> 

Strategic Plan goals
<ol style="list-style-type: none"> 1. Distinguish CNUCOP as an innovative leader in education 2. Enhance faculty reputation in their professional or scientific field 3. Cultivate a faculty reputed for delivery of innovative practice 4. Become nationally recognized for a high standard of community engagement 5. Improve employee satisfaction 6. Increase financial stability for CNUCOP 

For each strategic goal strategy and tactics were identified to help achieve the goal and for each strategy a rubric was developed for measuring success. A rubric was also developed to assess achievement of the Strategic Plan. The Strategic Plan was monitored and achievement of goals

evaluated on an annual basis by the Chair of each domain, and adjustments made if goals were met or timelines required amendment.

The plan underwent a thorough revision at a retreat held in June 2016; faculty and staff assessed achievement against the rubrics and reviewed the mission, vision and each of the goals; the mission and vision remained unchanged, but goals and tactics were revised to reflect achievement of goals and changes in the program or the organization (see box below). New Chairs were allocated to each workgroup and a new Director was appointed to oversee and monitor the revised Strategic Plan (see *Appendix 3*).

Strategic Plan 2016 update: six themes

1. Innovative leader in EDUCATION
2. Enhanced faculty reputation in RESEARCH & SCHOLARSHIP
3. Deliver innovative PHARMACY PRACTICE
4. Create high standard of COMMUNITY ENGAGEMENT
5. Create POSITIVE WORKPLACE
6. Achieve PROGRAM EXCELLENCE

2. Evidence about Program Quality

a) Students: profile, demographics and GPA of matriculating students

The profile of our students, by graduation class, is shown below in table 1. Over the nine years shown two-thirds of the students (63.6%) who have matriculated into the program are female; and 68.5% are Asian/Pacific Islander. The proportion of women mirrors national trends, and while the proportion of Asian students is relatively high, it nevertheless reflects the patterns and trends seen in pharmacy colleges in California and the growing trends in the pharmacy profession as a whole.

Table 1: Demographics of entering students

Description	Class of:								
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number matriculating									
All students entering class	89	90	100	106	107	114	121	68	126
Gender									
Male	31	39	34	41	39	39	37	24	51
Female	58	51	66	65	68	75	84	44	75
Ethnicity									
White/Non-Hispanic	20	13	18	25	24	23	23	13	24
Black/Non-Hispanic	3	6	4	9	4	4	1	1	4
Latino/Hispanic	3	1	2	2	8	4	2	3	3
Asian/Pacific Islander	55	66	72	59	67	82	87	49	94
Native American/Alaskan	0	1	0	1	1	1	0	1	1
Other/not known	8	3	4	10	3	0	8	1	0
Entering mean GPAs									
Overall GPA	3.02	3.15	3.27	3.21	3.21	3.11	3.16	3.12	3.04
Science GPA	2.99	3.00	3.13	3.08	3.08	2.92	2.98	2.95	2.83
Math GPA		3.17	3.30	3.21	3.14	3.13	3.16	3.08	3.00

Admission GPAs have fluctuated, with the class of 2014 having the highest average GPAs on admission of all the classes; however, there has been a general downward trend since then, with the most recent class having the lowest science GPA overall, although the overall GPA is higher than the very first cohort.

The College closely monitors admission GPAs and has analyzed these data in conjunction with data on students' performance and achievements once in the program. Please see section 3c (i) for this analysis.

b) The Curriculum and Learning Environment

i. Pedagogy: Team-Based Learning

CNUCOP was the first health professional school in the U.S. to use exclusively a Team-Based Learning (TBL) pedagogical method to deliver the entire didactic curriculum. TBL is a well-defined educational strategy that promotes judgment, mastery of content, communication, teamwork, problem-solving, and critical thinking. TBL emphasizes the importance of individual accountability, group collaboration, and the application of course concepts to complete team assignments. The role of the instructor is to clearly articulate the learning outcomes, create challenging problems for students to solve, and probe their reasoning in reaching conclusions. At the beginning of each semester, teams are formed by the Office of Academic Affairs (OAA) comprised of five or six students in each class based on selection criteria, (e.g., gender, ethnic group, GPA), that help achieve heterogeneity across teams. Students remain with the same team for all courses for one semester. All students are held accountable for their individual and group work, which accounts for 70% and 30% respectively of course grades. Student peer evaluations are performed once or twice a semester and count toward the final grade (part of the team mark).

The TBL pedagogy is highlighted in candidate recruitment materials and a sample TBL session is conducted on the campus with all candidates who are interviewed for the program; this helps to ensure all candidates are aware of the main pedagogy utilized in the College and are informed about the techniques used in TBL before they accept an offer of a place; we believe this helps them decide whether the format is suitable for their learning style; surveys of students we have interviewed and feedback from faculty involved in the admissions interviews indicate that the College's use of TBL is one of the reasons applicants choose our program.

Training in TBL is provided to new faculty as part of their onboarding and orientation to the College; all faculty are encouraged to enhance their TBL skills by availing themselves of ongoing training, and mentoring is provided by more experienced faculty. Several Faculty are certified TBL practitioners, who provide continuous support and training on TBL pedagogy throughout the year. Several faculty also have presented or provided training on TBL at national conferences, and have undertaken scholarship and research activities directly related to the delivery and practice of TBL.^{1,2}

Measures of teaching effectiveness, e.g., students' course evaluations, peer feedback, review and discussions with department Chairs, are all regularly undertaken and used to improve process and/or content of TBL. The evaluation form used to record feedback after observation of teaching by peers was recently revised in order to insure faculty received focused and specific feedback on TBL pedagogy. This feedback is then utilized in action plans when the course is next delivered. Thus quality and teaching effectiveness is assured as far as possible, and the assessment and feedback loop closed.

The previous program review commended the College and faculty for their commitment to TBL pedagogy; furthermore throughout various stages of the professional accreditation process, the College's use of TBL has received positive support and commendations from ACPE site visitors who provide regular external review of the program.

ii. The Didactic Curriculum

The College's program must prepare graduates with the professional competencies to enter pharmacy practice in any setting to ensure optimal medication therapy outcomes and patient safety; the program must satisfy the educational requirements for licensure as a pharmacist, and prepare students to meet the requirements for conferral of the degree. Per the Educational Outcomes outlined in ACPE's Accreditation Standards,³ the curriculum must develop foundational knowledge, and the knowledge, skills, abilities, behaviors and attitudes necessary to provide patient-centered care, manage medication use systems, promote health and wellness, and describe the influence of population-based care on patient-centered care. The curriculum must also develop in students' the right approach to patient care and practice, and it must develop their skills and ability for personal and professional development. These broad educational outcomes, along with demonstrating inter-professional competence, were adopted by the College in 2015 as its Program Learning Outcomes.

The College's faculty must be responsible for the design and delivery of the curriculum and they must monitor it to ensure breadth and depth of requisite knowledge and skills, the maturation of professional attitudes and behaviors, and the opportunity to explore professional areas of interest.³ The curriculum must define the expected learning outcomes and be developed with attention to sequencing and integration of content and the selection of teaching and learning methods and assessments. All curricular pathways must have both required and elective courses, and practice experiences, and must effectively facilitate student development and achievement of the professional competencies. The curriculum for the professional portion of the degree program must be a minimum of four academic years; it must include didactic course work to provide the desired scientific foundation, and include electives (6 to 15 hours). For the practice experiences a minimum of 300 hours of introductory pharmacy practice experiences is required, and four 6-week long advanced pharmacy practice experiences in 'required' settings, and two elective rotations are required in the final year.

The College has a Curriculum Committee responsible for design, delivery and oversight. It meets every month, and starting in October 2015 once a quarter a joint meeting is held with the Assessment Committee as part of the curricular quality assurance process.

Since the last program review the PharmD curriculum has undergone revision, based on ongoing periodic review and assessment processes. For example, changes occurred soon after the last program review in 2011 after faculty determined that it would be beneficial to integrate pharmacology with pathophysiology rather than presenting pharmacology with pharmacotherapy. This change required realignment of the topics presented in courses in order to prepare the students for the integration of pathophysiology and pharmacology, followed by pharmacotherapy; thus, pathophysiology and pharmacology topics are presented the semester

prior to the presentation of the same topics in pharmacotherapy. This realignment required a transition curriculum for the classes of 2012 and 2013, to ensure that students received all curricular topics prior to the institution of the new curriculum for the class of 2014.

Major curricular changes were made more recently as a result of annual curricular reviews and to ensure compliance with new educational outcomes and with ACPE Standards 2016. In 2014 faculty started to discuss what changes would be needed to ensure compliance with the new 2016 Standards, and to address changes in the practice of pharmacy. Thus, a new curriculum - "Curriculum 3.0" - was implemented in fall 2016 (see *Appendices 4a and 4b* for details of the Academic Program as it was in 2015-16, and for the new Program, known as Curriculum 3.0), with modifications made which also accommodated feedback from students, faculty and preceptors, addressed assessment of students' learning, and addressed new rules and regulations in healthcare. A brief description of these recent curricular changes are given below:

- Longitudinal Laboratory Practicums (PRC): A series of activities and integrated skills were identified. Some of these components and skills such as OSCE and Simulation were removed from didactic courses, to allow progressive development through the longitudinal practice. A practicum was added to each semester of the didactic curriculum to enhance students' preparedness for practice and provide a link between didactic knowledge and practical applications. All the practicums are designed to assess individual, rather than team competency, addressing preceptor feedback that TBL pedagogy in the didactic curriculum was not providing sufficient opportunities for our students to develop key individual skills.
- To provide hands-on experience pharmaceutical compounding and use of sterile IV hood has been added to the core curriculum.
- Interprofessional Education (IPE): The COP has been engaged in IPE since 2013, when the College began collaboration with the College of Nursing at California State University in Sacramento (CSU). With the opening of the College of Medicine (COM), COP has begun to implement IPE events with the two colleges. Dr. Jennifer West was named the director of IPE who plans and implements IPE events for both COM and COP programs. CNUCOP continues its collaboration with the Colleges of Nursing at CSU Sacramento.
- Other changes include integration of professionalism training and assessment in each semester, resequencing sections of Drug Information, Law & Ethics and Self-Care courses, increasing the credit hours for the Pathophysiology and Pharmacology III course to include fundamental concepts in cancer pharmacology, reducing credit hours for the therapeutics courses, and implementation of clinical pharmacokinetics and calculations into each practicum for the purpose of continuous practice.

The core didactic curriculum has been mapped against the didactic requirements recommended by ACPE, and the program and institutional learning outcomes, with mapping exercises regularly undertaken to ensure that the program offers sufficient breadth and depth of learning expected of PharmD candidates. Most recently, at a College Retreat in 2015, all

faculty reviewed their course content against the new ACPE standards and re-mapped content so that we could ensure all relevant subjects and topics were being covered at the right level (see *Appendix 5* for latest Curriculum Map); the map was reviewed by the Curriculum Committee and the Office of Academic Affairs, and revisions to course content have been made to address any subject gaps; the map is updated every semester following any changes made by faculty to their course. The map, along with discussions with student representatives on the Curriculum Committee, has also been used to identify topics for electives, thus aligning faculty expertise with student interest in topics that are not considered core to the curriculum.

COP students are required to take a minimum of two 2-credit electives, one in Spring of the P2 year and one in Fall of the P3 year. A list of electives offered last year is given in *Appendix 6*. Minimum and maximum numbers are set for each elective by the faculty, with students given a deadline prior to the start of each semester to register for the course of their choice. To provide flexibility an 'Independent Study' elective option is also available and students who want to work directly with a faculty, often to obtain exposure to a specialized research project, choose this over one of the didactic electives.

We believe that the curriculum and co-curriculum are effective, as evidenced from student achievements detailed throughout the report, including graduation rates, learning outcomes, grade reports, pass rates in major external assessments, and employment success after graduation. The number of student accomplishments and awards, including national student organization chapters of the year, students' acquisition of competitive extramural dollars, scholarly collaboration by students, their leadership in public health, and their success in consecutive statewide quiz bowl competitions, are also testament of an effective curriculum.

iii. Curricular quality assurance

In addition to feedback obtained from the last full program review, and regular periodic performance reviews undertaken on a semester or annual basis, the annual curricular review process includes external review by preceptors, and direct feedback from faculty and students, received either through formal surveys, through committees, or through retreats.

Other quality assurance initiatives include workshops delivered each semester by the OAA and the Curriculum Chair to guide faculty on preparing and reviewing a syllabus; the workshop covers a range of topics including how to map course content against ACPE didactic requirements, guidance on mapping course content against program and institutional outcomes; scheduling, reading, course policies, and so on. Attending the workshop is mandatory for all Course Coordinators and optional for other faculty.

The Curriculum Committee designed a syllabus template in order to standardize the content and format of each course syllabus which was revised recently to ensure compliance with updated Standards and learning outcomes (e.g., new PLOs). The revised template and review processes and timelines were shared with the faculty for their inputs and final approval (see *Appendix 7* for syllabus template).

To optimize the course and the content delivery, course coordinators are required to review feedback from the students given in their course evaluations (see section 2d (ii)) and the Course Learning Outcomes assessment. After reviewing these documents, the course coordinator is required to create a plan of action addressing the content, assessment and/or delivery of the course. The plan of action and the course syllabus is then reviewed with the relevant department Chair. According to guidelines of the Curriculum Committee, courses taught by the same faculty previously and without any substantive changes are reviewed by the department Chair only, with the option to be reviewed by the Full Committee at the discretion of the department Chair. New courses or existing courses with substantive changes (including but not limited to changes in course coordinator, content, assessment) are reviewed by the department Chair, an assigned reviewer from the Curriculum Committee, with the option to be reviewed by the Full Committee per reviewer's recommendation. To ensure adequate that time is provided, the Curriculum Committee shares the time line for syllabus review several months prior to the start of each semester. Finalized syllabi are posted on the Curriculum Committee's folder accessible to all faculty, and used by the Office of Academic Affairs to develop the calendar of "important dates" to prevent double scheduling of major summative assessments. This calendar is shared with faculty and students. The syllabi are also uploaded into CANVAS and made available to the students at least two weeks prior to the start of teaching.

iv. Inter-Professional Education (IPE)

The College has been engaged in IPE with the College of Nursing at California State University in Sacramento (CSUS) since 2013. The initiative involves our P2 and P3 students and the nursing students learning together on case-based scenarios and simulations, on campus at the College and at CSUS. The initiative was previously led by Dr. Ofstad who left the College in 2015. A Director of IPE was appointed in 2016, Dr. Jennifer West. Dr. West coordinates existing IPE activities with CSUS and has recently begun to plan and implement IPE events between pharmacy, CSUS and the new College of Medicine at CNSU. An IPE curriculum plan for one of the events with the nursing students is given in *Appendix 8* as an example of the format used.

An IPE committee consisting of faculty and students of the two CNSU Colleges was established in 2016 in order to strategize and plan further IPE initiatives, and to consider assessment and outcomes associated with existing activities. The IPE director is also a member of the College's Curriculum Committee so that implementation and measuring success of IPE is firmly embedded within the didactic and experiential education curriculum. Future IPE plans include a possible student-run clinic, joint research or independent IPE study, and co-curricular IPE activity, such as health fairs with involvement of students from all colleges.

v. Experiential Education

The purpose of the experiential education component of the curriculum is to provide the pharmacy student with practical experience in various aspects of the profession of pharmacy. The student gains experience in problem solving and providing patient care services while applying the basic and pharmaceutical sciences learned in the classroom and practice laboratories. A pharmacist preceptor directs the majority of practice experiences. Each experience provides the student with an opportunity to incorporate learned didactic information into the development of the skills necessary to be a competent pharmacy practitioner.

The Experiential Education Program is divided into two parts: Introductory Pharmacy Practice Experience (IPPE) and Advanced Pharmacy Practice Experience (APPE). In the second and third years, the students participate in Introductory Pharmacy Practice Experiences (IPPE I-IV) to gain practice experiences in community, institutional and specialty practice settings. Throughout IPPE I-IV, the students practice and strengthen their patient care skills through a wide array of pharmacy practice experiences. The IPPEs compliment the didactic curriculum and involve a variety of experiences including shadowing pharmacists, interviewing and counseling patients, as well as performing patient assessments. The students are required to keep a portfolio containing descriptions and reflections of these experiences.

Both IPPE and APPE components have “Required” and “Specialty” practice experiences in the curriculum. Each “Specialty” rotation is designed to give the student the opportunity to explore career opportunities and seek training in some of pharmacy’s less traditional roles. The current lists of specialties include, but are not limited to, long-term care, research, PBM, pharmacy professional organizations, industry, compounding, psychiatry, cardiology, oncology, infectious disease, critical care, trauma, organ transplant, and emergency.

In general the students’ ratings of their preceptors are high, and while preceptor response rates to AACP surveys are low, ratings of our students and the College in general by preceptors are also mostly positive (see *Appendix 9* for a copy of the 2016 Preceptor Survey Report).

During the new Dean’s tenure the Experiential Education Office has been reorganized, making it a distinct Department which reports directly to the Dean; the reorganization involved the following:

- Established two Co-Chairs/Director of Experiential Education (IPPE and APPE)
- Created two new Assistant Director of Experiential Education positions (IPPE/APPE)
- Created two positions for Experiential Education coordinators
- Established the Quarterly Preceptor Advisory Council (PAC) meeting- met twice in 2016 (04/01/16 and 09/12/16)
- Conducted Annual Preceptor Conference with CEs (6/18/16)
- Organized regional Preceptor Appreciation Banquets (7/13/16) in Sacramento, Los Angeles (8/4/2016), Oakland (8/20/2016), and Reno, Nevada to recognize our

preceptors and to acknowledge the recognition awards to the preceptors selected by the students.

- Published the Experiential Education biannual preceptor newsletter

The reorganization of the experiential education department is recent so the College will monitor progress in the coming year. The department has developed an action plan (see section 4) based on results from the 2016 Preceptor Survey to ensure the College meets the new ACPE Standard 20 on preceptor development and training.

c) Student Learning and Success

i. Student Retention and Graduation Rates

The on-time graduation rate for the class of 2016 was 85.9%, a slight improvement on the previous year, but an overall drop if compared with the first graduating cohort (Table 2). Two classes alone (2014 and 2017) accounted for over half of all the dismissals/withdrawals to date and the class of 2016 alone accounted for nearly a third of students who have been held back.

The class of 2017, with the highest dismissal rate on record, has the second lowest Science GPA on admission, which may explain some of the academic difficulty experienced by those who were dismissed. The class of 2014 on the other hand, had the highest admission GPAs of all the classes, but the higher attrition for this class was due to withdrawal, and mostly for personal reasons rather than academic (see Table 3).

Further investigation about the students in the class of 2016 who were held back a year suggests that academic difficulty was not the only or even main reason for delaying their graduation: 5 out of the 8 students in this class took a leave of absence, either because of illness, pregnancy, or other family-related reason.

The current class of 2020 has the lowest science GPA on admission of all classes to date, so the College will closely monitor their progress through the program to ensure as far as possible that dismissals because of poor academic performance are kept to a minimum.

Table 2: Matriculation, graduation and progression data: 2018-2016

Description	Class of:									TOTAL
	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Matriculated	89	90	100	106	107	114	121	68	126	921
[Transfer student]	-	-	-	-			[1]		[3]	[4]
Withdrew	2	-	8	4	6	2	1	3	1	27
Dismissed	1	-	3	1	1	9	2	1	1	19
Held back (on a 5-year plan)	3	1	-	3	8	4	4		2	25
Graduated on time	83	89	89	98	92	[99]	[114]	[64]	[122]	[850]
Total graduated	83	92	90	98	95	[107]	[118]	[68]	[122]	[873]
Percentage graduating on time	93.2	98.9	89.0	82.3	85.9	[86.8]	[95.0]	[94.1]	[96.8]	[92.29]

While graduation rates vary for each cohort they are well within acceptable standards as laid out in ACPE's *'Policies and Procedures for ACPE Accreditation, 2016'* (where dismissals should not exceed 6% of the matriculating class size, withdrawals should not exceed 6%, the number held back should not exceed 15%, while total attrition overall should not exceed 24%). The average *on-time* graduation rate over the lifetime of the program so far is 92%.

The anticipated graduation rate for the class of 2017 (bracketed data in table 2) is expected to be 86.8% if there are no additional withdrawals or dismissals, so a slight improvement in the on-time graduation rate from the prior year can be expected.

Throughout 2016 data collated about previous classes were analyzed to examine the reasons for attrition (Table 3) and to explore any patterns or correlations with other student factors. For some cohorts admissions GPA does sometimes predict student's likelihood of getting academic alerts or being dismissed, but the pattern is not consistent in each and every cohort, suggesting other factors are at play (e.g., see tables 19 to 23).

We know from further investigation that the majority of students are dismissed or withdraw in their first year, and anecdotal evidence suggests that involvement in too many student organizations in the first year distracts students from academic work and adversely affects performance of weaker students; furthermore some students were having trouble adapting to TBL. To address some of these issues the College decided to review the Academic Progression Policy in 2016 and some changes were made to help ensure first year students in particular were not harshly affected if they have a poor first semester. The current policy is provided in *Appendix 10*.

Table 3: Reasons for attrition

		Graduating class									TOTAL
		2012	2013	2014	2015	2016	2017	2018	2019	2020	
Reason for dismissal:	Academic	1	0	3	1	1	5	2	1	1	15
	Other	0	0	0	0	0	4	0	0	0	4
Reason for withdrawal:	Personal	2	0	2	2	2	1	0	3	0	12
	Medical	0	0	1	0	0	1	0	0	0	2
	Financial	0	0	2	1	0	0	1	0	0	4
	Transferred	0	0	2	1	1	0	0	0	1	5
	Other	0	0	1	0	3	0	0	0	0	4
	Total dismissed or withdrew	3	0	11	5	7	11	3	4	2	46

ii. Learning Outcomes

The College has a learning outcomes structure that extends from the course and co-curricular levels to the programmatic and institutional levels. The learning outcomes are embedded within the curriculum, and assessed late in students' program of study at points designated for mastery of the learning outcomes. Each learning outcome, at all levels, has a corresponding rubric that identifies key indicators of achievement of the outcomes and varying levels of student performance.

Course learning Outcomes

Embedded summative assignments and assessments determine students' achievement of *Course Learning Outcomes* (CLOs). CNUCOP's Team-Based Learning (TBL) format places all students in learning teams; this format is conducive to individual and team formative and summative assessments, as each individual student is ultimately responsible for learning and this responsibility is reflected in the total performance of the team. The TBL focus further allows students to work on their communication and professionalism, individually and as a team. Daily formative assessments provide feedback needed to make improvements in teaching and learning. Individual-Based Application Tests (IBATs) and Team-Based Application Tests (TBATs) provide feedback for students on their ability to apply what they have learned. Additional formative assessments include the Individual Readiness Assurance Tests (IRATs) and the Team Readiness Assurance Tests (TRATs). Students also obtain feedback through the Individual Cumulative Assessment Tests (ICATs) and Team Cumulative Assessment Tests (TCATs). This method of assessing students' course concepts' learning reinforces their learning at a deeper level. Assessments are varied and adapted to the particular topic or skill being tested; they include posters, papers, presentations, performances, course exams, Milestone Exams, and external exams such as the PCOA (see section 2c).

The Course Learning Outcomes (CLOs) - as well as the corresponding rubrics - are published in course syllabi, thus expectations for achievement are defined and articulated to students, and all student learning is assessed using these rubrics. Course assessments are tagged in ExamSoft against the CLOs, and the CLO data is compiled each semester with results presented in CLO reports to help inform the annual curricular review cycle. Student learning outcomes' results are collected longitudinally by the Director of Assessment to monitor student progression and shared with individual course instructors.

Students' performance level (on all levels of learning outcomes) is described as *Initial* if average performance is below 69% in all course learning outcomes, as *Developing* if between 69 and 78%, as *Developed* if average performance on a CLO is between 79 and 89%, and as *Proficient* if average performance is above 89%. The College aims to have most students reach the *Developed* level ($\geq 79\%$) in all course learning outcomes (CLOs). When students reach only the *Initial* level ($< 69\%$), faculty are expected to make adjustments to their teaching or assessments in order to show improvements in student learning and achievement of the CLOs next time the course is delivered.

The full CLO report for 2016 is given in *Appendix 11*. To illustrate how the CLOs are presented in the report the dashboard excerpt below shows the summary of performance in Spring 2016 courses for the Class of 2019 while the narrative identifies the CLOs with the highest and lowest performance: it shows that their performance on course learning outcomes was primarily in the range of *Developing* to *Developed*, and occasionally reached *Proficient*.

Here is the summary of Class of 2019 performance during Spring 2016

P1	CLO		CLO		CLO		CLO		CLO		CLO	
PHAR 622	1	P	2	D	3	Dp	4	P	5		6	
P1	CLO		CLO		CLO							
PHAR 633	1	D	2	D	3	Dp						
P1	CLO		CLO		CLO		CLO					
PHAR 634	1	P	2	P	3	D	4	D				
P1	CLO		CLO		CLO							
PHAR 642	1	Dp	2	D	3	P						
P1	CLO		CLO		CLO							
PHAR 661	1		2		3							

The CLOs with the highest (*Proficient*) average performance level were the following:

- Describe the basic mechanisms of pathology (PHAR 622, CLO 1: 90.58%)
- Describe the major mechanism of action and adverse effects of pharmacologic agents used to treat selected neurologic, psychiatric, and neuroendocrine disorders (PHAR 622, CLO 4: 90.10%)
- Describe and discuss the epidemiologic principles used in the study of medication use in a naturalistic setting (PHAR 634, CLO 1: 92.43%)
- Effectively communicate information to ensure safe and proper usage of nonprescription medicines (PHAR 642, CLO 3: 93.96%)

The CLOs with the lowest (*Developing*) average performance level were the following:

- Describe and discuss the anatomy and physiology of the central and peripheral nervous system and the neuroendocrine system (PHAR 622, CLO 3: 78.77%)
- Selects specific drug products based on pharmaceutical, therapeutic or bioequivalency parameters (PHAR 633, CLO 3: 75.94%)
- Evaluate a patient's nonprescription medication needs using a systematic assessment approach (PHAR 642, CLO 1: 77.68%)

Institutional Learning Outcomes

Listed in the box below are the *Institutional Learning Outcomes* (ILOs), that is, the *core competencies* expected of all students at CNSU, (see box below) - each learning outcome is focused on the essential knowledge, skills, attitudes, and values needed for students to become successful pharmacists. The learning outcomes for the Institution were developed with faculty input; they are published on the university website, and posters identifying them are also displayed in classrooms and corridors around the institution.

Institutional Learning outcomes

1: Critical thinking. Exercise reasoned judgement to assess technical information and make well-informed decisions using evidence-based approaches.

2: Written communication. Demonstrate the ability to write coherent, supported, and logically structured prose.

3: Oral communication. Demonstrates oral communication skills.

4: Professionalism. Interact with respect, empathy, diplomacy, and cultural competence.

5: Quantitative reasoning. Demonstrate ability to use mathematics and statistics in problem solving.

6: Information literacy. Identify and search relevant libraries of information and databases; synthesize information obtained from primary literature using properly referenced citations.

Program Learning Outcomes

CNUCOP faculty also collectively developed the learning outcomes for the pharmacy program (see box below) and the institution; they were originally loosely based on professional accreditation standards. However, in anticipation of the new 2016 Standards the PLOs were revised in the summer of 2015 to align with the new standards of the professional accreditor. Thus, the program learning outcomes (PLOs) are now based on the Accreditation Council for Pharmacy Education (ACPE) standard which drew on the American Association of Colleges of Pharmacy (AACP)'s CAPE educational outcomes. The PLOs are published in the catalog and printed on posters in the classrooms, while the PLO results for each class are published on the website. All courses map their course learning outcomes to the PLOs and ILOs where relevant and these maps are used to ensure coverage of all learning outcomes and identify courses where signature assignments are used to measure and validate the outcomes (see *Appendices 12 and 13* for PLO and ILO maps respectively).

Program Learning Outcomes:

1: Foundational Knowledge. Demonstrates the knowledge, skills, abilities, behaviors, and attitudes necessary to apply the foundational sciences to the provision of patient-centered care

2: Essentials for Practice and Care. Demonstrates the knowledge, skills, abilities, behaviors, and attitudes necessary to provide patient-centered care, manage medication use systems, promote health and wellness, and describe the influence of population-based care on patient-centered care

3: Approach to Practice and Care. Demonstrates the knowledge, skills, abilities, behaviors, and attitudes necessary to solve problems; educate, advocate, and collaborate, working with a broad range of people; recognize social determinants of health; and effectively communicate verbally and nonverbally

4: Personal and Professional Development. Uses the knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate self-awareness, leadership, innovation, entrepreneurship, and professionalism

5: Interprofessional Competence. Uses the knowledge, skills, abilities, behaviors, and attitudes necessary to demonstrate appropriate values and ethics, roles and responsibilities, communication, and teamwork for collaborative practice

As mentioned, the College conducts a cyclical review of assessment data to ensure that student learning outcomes meet institutional standards for student performance, which include student achievement of learning outcomes at the “Developed” level for all PLOs and ILOs (Core Competencies). For the College, all classes of graduates have demonstrated achievement of the PLOs at the “Developed” or higher level.

Co-Curricular Learning Outcomes

The COP already has had an excellent co-curricular program in place for some time and has documented activities on a routine basis. However, we have recently revised the Co-Curricular Learning Outcomes (CoCuLOs) to ensure alignment with the updated 2016 Standards from ACPE (see box below) and to reflect experiences offered alongside the classroom during the didactic and experiential curriculum. As well as revision of the outcomes themselves, we have made improvements in how we collect data on student co-curricular activity, and how we measure and assess outcomes. We have recently completed co-curricular rubrics aligned with ACPE 2016 Standards 3 and 4 so we can better assess outcomes; we have designed new data collection forms so that students are better able to document and demonstrate the appropriate knowledge, skills, abilities, behaviors and attitudes. We intend to implement, with support from faculty advisors, the use of CANVAS to document and evaluate students’ participation in co-curricular activities as they progress through the pharmacy curriculum.

Co-Curricular Learning Outcomes

1. **Social Awareness and Cultural Sensitivity** - Students demonstrate awareness of and responsiveness to social and cultural differences by adapting behaviors appropriately and using effective interpersonal skills to better serve patients from diverse backgrounds and communities.
2. **Professionalism and Advocacy** - Students demonstrate professional behavior and effective interactions with other healthcare professionals and patients and advocate for initiatives to improve patient care, health outcomes, and practice settings in pharmacy.
3. **Self-Awareness and Learning** - Students demonstrate self-awareness through reflection and the development of appropriate plans for self-directed learning and development.
4. **Innovation/ Entrepreneurship** - Students demonstrate innovation and creativity and develop novel strategies to accomplish professional goals.
5. **Public Health and Education** - Students apply skills learned in the classroom to create and effectively deliver public health initiatives and health-related education to the community.
6. **Service and Leadership** - Students demonstrate the ability to lead and work collaboratively with others to accomplish a shared goal that improves healthcare.

Students will be required to document participation in co-curricular activity each year, by uploading supporting documentation to an electronic database to verify activity, from preceptors for example, or other stakeholders involved with the event or activity. Various data collection forms that aid student self-assessment of the experience are currently being considered. We are aiming to introduce a requirement that each student undertakes and documents up to 6 co-curricular activities by the end of the P3 year, with an average of completing 1 co-curricular activity per semester for the first 3 years of pharmacy school. It is possible that this will become a graduation requirement to ensure each student participates in the co-curricular program. Students will also be expected to demonstrate a spread of activity across each of the six categories of the co-curricular program, to ensure a well-rounded co-curricular experience will be obtained. Students will meet with their advisors who will ensure advisee engagement in co-curricular activities is being tracked and assessed properly. The rubric will help advisors review the quantity and quality of students' participation in and self-assessment of the co-curricular activities.

iii. Course outcomes: Grade distribution

Each semester a grade distribution report is routinely compiled as part of the process to evaluate and establish students' "Satisfactory Academic Progress". A presentation of the data is shared with Faculty for information and discussion. Data shown below in tables 4a and 4b and the charts which follow, are examples of data presented to Faculty last year, showing final course grades for the Academic Year 2015-2016 (data collected in 2012 is provided as a comparison).

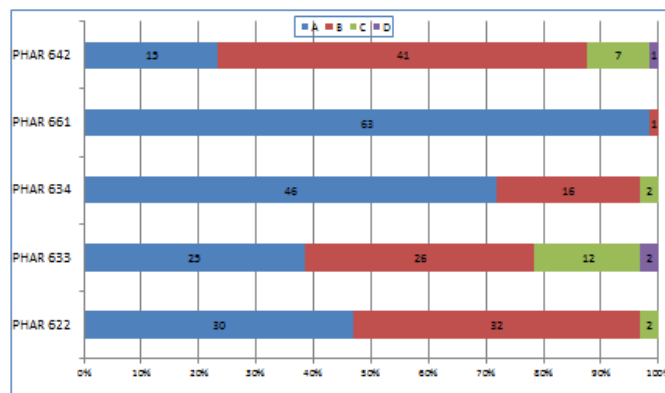
Table 4a: Didactic Courses: Grade Distribution Analysis: Fall 2015 (and Fall 2012)

Course	Fall 2015							Fall 2012						
	A	B	C	D	W	F	Total	A	B	C	D	W	F	Total
PHAR 621	28	34	3	2			67	36	57	9			1	103
PHAR 631	17	33	14	1			67	18	67	16			2	103
PHAR 632	20	42	3	2			67	21	71	10	1			103
PHAR 641	24	41	1	1			67	18	69	15	1			103
PHAR 724	41	73	7				121	27	66	10			1	104
PHAR 743	23	83	14				120	41	61	1			1	104
PHAR 757	41	71	9				122	16	75	12			1	104
PHAR 811	86	18					104	8	63	20				91
PHAR 827	67	35	2				104	22	64	5				91
PHAR 853	30	71	4				105	23	65	3				91

Table 4b: Didactic Courses: Grade Distribution Analysis: Spring 2016 (and Spring 2012)

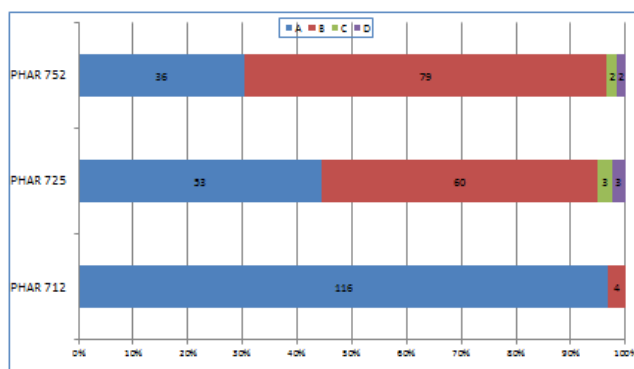
Course	Spring 2016							Spring 2012						
	A	B	C	D	W	F	Total	A	B	C	D	W	F	Total
PHAR 622	30	32	2				64	54	45	4	1			104
PHAR 633	25	26	13	1			65	42	60	3				105
PHAR 634	46	16	2				64	33	66	5				104
PHAR 642	15	41	8				64	31	73	0				104
PHAR 661	63	1					64	96	8	0				104
PHAR 712	116	4					120	70	20	1				91
PHAR 725	53	60	5	1			119	31	59	1				91
PHAR 752	36	79	3	1			120	9	57	25				91
PHAR 813	22	74	7				103	26	61	3				90
PHAR 815	94	9					103	33	56	1				91
PHAR 856	20	74	11				102	13	70	8				91
PHAR 858	73	32					105	-	-	-	-	-	-	-

Grade distribution – Spring 2016 P1 courses

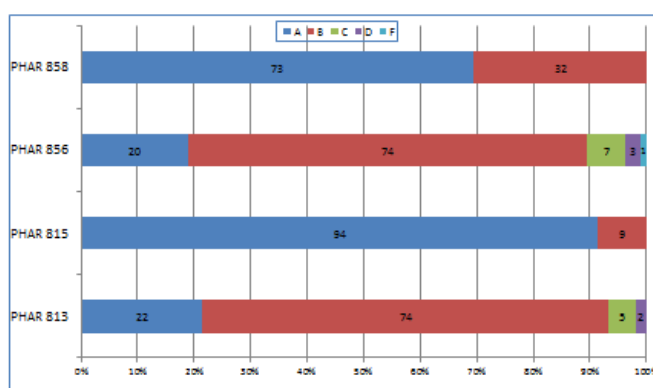


NB: These are final (ie, with team) grades (pre-remediation)

Grade distribution – Spring 2016 P2 courses



Grade distribution – Spring 2016 P3 courses



iv. Grade Distribution by Course

Grade distribution across all courses and for all years of the program to date is provided in *Appendix 14*. Given below are just a few examples, showing the grade distribution for several courses from different years of the program to illustrate what data are compiled and used in descriptive and correlational analysis of student performance.

Pharmacy courses have a unique identifier: each course has letters (PHAR) and a 3-digit course number, with the first digit representing the year (600 are first year courses, 700 are second year courses, and so on); the second number represents the semester (1 is Fall, and 2 is Spring), and the final number represents the course itself and its sequence in the curriculum; thus PHAR 611 was a first year course delivered in the Fall semester and was the first course in the sequence of Fall courses to the P1s.

When a course was moved to a different year in the program the course number is shown in brackets, signifying to which year group the course was delivered and when. Most courses have been delivered in the same year since the start of the program, but the sequencing of a few courses was changed as a result of programmatic evaluation, e.g., 'PHAR 733 – Pharmacokinetics' was delivered to the first two cohorts in the second year of the program, but moved to the first year for the Class of 2014, and has remained there ever since. Law was delivered in the second year at the beginning of the program, but moved to the P3 year in 2011-12, where it has since remained.

Occasionally, some courses were stopped altogether. For e.g., 'PHAR 826: Biotechnology & Pharmacogenomics' was no longer offered as a single course after delivery to the Class of 2015. This was in part because curriculum mapping had highlighted some redundancy in PHAR 826, so content was rationalized and relevant material dispersed across several existing didactic courses. Some content was also moved into a new skills lab (PHAR 858: Skills Lab), which the Curriculum Committee felt was necessary after feedback had been received from preceptors about students' lack of readiness for APPEs.

PHAR 611/811: Pharmacy & the Health Care System	A	B	C	D	F
2008 -2009 - 611 – <i>Class of 2012</i>	14	71	2	0	0
2009 -2010 - 611 – <i>Class of 2013</i>	23	62	5	0	0
2010 -2011	x	x	x	x	x
2011-2012	x	x	x	x	x
2012-2013 - 811 – <i>Class of 2014</i>	8	63	19	0	2
2013-2014 - 811 - <i>Class of 2015</i>	34	61	6	0	1
2014-2015 - 811 – <i>Class of 2016</i>	61	38	1	0	3
2015-2016 - 811 – <i>Class of 2017</i>	84	17	0	0	0

PHAR 633/733: Pharmacokinetics	A	B	C	D	F
2009 -2010 - 733 - <i>Class of 2012</i>	15	52	18	1	0
2010 -2011 - 733 - <i>Class of 2013</i>	41	45	3	0	0
2010 -2011 - 633 - <i>Class of 2014</i>	7	59	26	0	0
2011-2012 - 633 - <i>Class of 2015</i>	42	57	3	0	0
2012-2013 - 633 - <i>Class of 2016</i>	19	69	12	0	3
2013-2014 - 633 - <i>Class of 2017</i>	34	59	17	1	0
2014-2015 – 633 - <i>Class of 2018</i>	34	64	18	1	0
2015-2016 - 633 - <i>Class of 2019</i>	25	25	13	1	3

PHAR 634/734/834: Biostatistics & Pharmacoepidemiology	A	B	C	D	F
2010 -2011 – 634 - <i>Class of 2014</i>	78	16	0	0	0
2010 -2011 – 734 - <i>Class of 2013</i>	58	32	0	0	0
2010 -2011 – 834 - <i>Class of 2012</i>	57	28	0	0	0
2011-2012 – 634 - <i>Class of 2015</i>	33	65	4	0	0
2012-2013 – 634 - <i>Class of 2016</i>	68	31	2	0	2
2013-2014 – 634 - <i>Class of 2017</i>	43	66	2	0	0
2014-2015 – 634 - <i>Class of 2018</i>	69	45	3	0	0
2015-2016 – 634 - <i>Class of 2019</i>	46	16	2	0	3

PHAR 826: Biotechnology & Pharmacogenomics	A	B	C	D	F
2010-2011 - <i>Class of 2012</i>	22	62	0	0	0
2011-2012 - <i>Class of 2013</i>	6	75	12	0	0
2012-2013 - <i>Class of 2014</i>	16	72	1	0	3
2013-2014 - <i>Class of 2015</i>	42	54	4	0	2

PHAR 858: Skills Lab	A	B	C	D	F
2014-2015 - <i>Class of 2016</i>	59	41	0	0	3
2015-2016 - <i>Class of 2017</i>	67	32	0	0	0

v. Milestone and Capstone performance

The milestone examinations are administered yearly to allow students the opportunity to demonstrate that they are retaining what they have learned during their P1 and P2 years and that they are reaching a minimum level of competency as defined by the faculty. *Milestone 1* is taken at the end of the P1 year (or early P2); *Milestone 2* is taken at the end of P2 year (or early P3). They are cumulative and comprehensive examinations, consisting of 120 questions compiled by faculty, and each question is mapped, most recently using ExamSoft, to relevant courses and their learning outcomes. Questions are mostly multiple choice format, and students are not given information about the assessment ahead of time as the intention is to assess overall retention of knowledge, not performance following specific focused study. Results from milestone assessments can be and have been used to identify areas where curricular improvement is needed; for example, in the earlier milestone assessments students performed poorly on calculations, resulting in the addition of more calculations practice in PHAR 632.

At the time of the last program review students met with their advisors to obtain their milestone scores; academic alerts were issued to each student for each section/topic that the student did not score at least 70%, and students were required to remediate those topics or sections until faculty were assured they had achieved a foundational understanding of the material. P3 students who did not successfully remediate were not allowed to begin their APPE rotation until successful completion of remediation. A Milestone Committee was formed in 2010 to guide compilation of the exams and to evaluate the outcomes, but faculty who oversaw this process are no longer with the College, resulting in some loss of data and information. More recent and current practice is that students are emailed their personal milestone scores, broken down by topic, from the Assessment Director. This is then followed by an in class presentation providing an overview of the results with suggestions about how to improve on any weaknesses; students are currently not required to remediate.

The *Capstone* is taken at the end of the P3 year, and until 2016 questions were compiled by faculty. In 2016 the Capstone was replaced by the PCOA for the Class of 2017. Students are also assessed by an external company in their P4 year following a 5-day board review course.

What data were available have been gathered and centralized by the Office of Academic Affairs (OAA), and analyzed for this program review; assessment results, where available, are shown in Table 5a and correlational analyses of data from the first cohort and the classes of 2018 and 2019 to examine predictors of success and to assess whether the assessment is worth continuing, follow.

Table 5a: Summary of performance on Milestone and Capstone exams: % scores

	CO 2012	CO 2013	CO 2014	CO 2015	CO 2016	CO 2017	CO 2018	CO 2019	CO 2020
Milestone 1 % score	81.05	71.82		65.00			56.6	52.8	Nov-17
Milestone 2 % score	66.34		56.00			59.1	54.1	Sep-17	Sep-18
Capstone % score	35.95	52.52	39.88	45.51	36.00				
PCOA	Not app	Not app	Not app	Not app	Not app	306.00	May-17	May-18	May-19
PassNAPLEXnow				45.19	47.33				

It would appear that milestone performance of our students has gradually worsened over the years shown in the table above, since average scores have declined year on year; this could represent a real decline in performance, a change in the content and format of the assessment, or it could reflect that the assessment is undervalued by the students if no minimum requirements for passing are expected and no penalties are imposed if minimum competency is not demonstrated.

Table 5b: Class of 2012 milestone correlational analysis

	Adm GPA	P1 GPA	P2 GPA	Milestone 1	Milestone 2
Adm GPA	1.00				
P1 GPA	-0.07	1.00			
P2 GPA	0.05	0.91	1.00		
Milestone 1	-0.02	0.54	0.52	1.00	
Milestone 2	0.06	0.57	0.63	0.67	1.00

Pearson correlation; dark blue shading = significant at 0.01 (2 tailed)

Correlational analysis shows that the overall admission GPA for the CO 2012 is not a good predictor of success of GPA performance in college or in the two milestone exams. However, P1 GPA and P2 GPA are moderate to strong predictors of success on the two milestones, suggesting that students who do well in class are the most likely to retain information. The analysis shows also that Milestone 1 performance is a strong predictor of success on the Milestone 2.

Table 5c: Class of 2018 milestone correlational analysis

	Adm GPA	P1 GPA	P2 GPA	Milestone 1	Milestone 2
Adm GPA	1.00				
P1 GPA	0.13	1.00			
P2 GPA	0.33	0.95	1.00		
Milestone 1	0.26	0.64	0.66	1.00	
Milestone 2	0.17	0.62	0.69	0.74	1.00

Pearson correlation; dark blue shading = significant at 0.01 (2 tailed)

Admissions GPA for this cohort is a significant but weak predictor of the P2 GPA and Milestone 1 exam. P1 GPA and P2 GPA are moderate to strong predictors of success on the two Milestones, suggesting again that students who do well in class are the most likely to retain information. For this cohort, as in the first cohort (CO 2012 above), performance on the Milestone 1 assessment is again a strong predictor of success on the Milestone 2.

The following table shows correlations between P1 GPA and performance on all P1 courses for the CO 2018 and students' performance on the corresponding sections on the Milestone exam. It should be expected that performance on a given P1 course should correlate with performance on the milestone questions which correspond to that course.

Table 5d: CO 2018: Correlation Analysis of Milestone 1 and P1 courses

Milestone/ GPA	P1 GPA	M1 - 621	M1 - 622	M1 - 631	M1 - 632	M1 - 633	M1 - 634	M1 - 641	M1 - 642	M1 - 661
P1 GPA	1.00	0.48	0.44	0.34	0.43	0.48	0.31	0.31	0.17	0.22
PHAR 621	0.77	0.38	0.25	0.18	0.28	0.30	0.17	0.12	0.00	0.03
PHAR 622	0.77	0.45	0.52	0.36	0.30	0.45	0.24	0.23	0.19	0.17
PHAR 631	0.74	0.28	0.39	0.33	0.22	0.25	0.10	0.16	0.09	0.24
PHAR 632	0.72	0.40	0.19	0.25	0.42	0.31	0.19	0.33	0.03	0.11
PHAR 633	0.83	0.37	0.37	0.23	0.36	0.45	0.31	0.25	0.24	0.11
PHAR 634	0.74	0.34	0.23	0.20	0.35	0.36	0.43	0.26	0.08	0.16
PHAR 641	0.68	0.29	0.29	0.23	0.21	0.26	0.18	0.25	0.22	0.35
PHAR 642	0.50	0.19	0.39	0.21	0.36	0.38	0.30	0.29	0.10	0.26
PHAR 661	0.53	0.19	0.07	0.07	0.29	0.29	0.17	0.17	0.27	0.22

For the class of 2018 P1 GPA is a strong to very strong predictor for how well students do in their P1 milestone, suggesting good retention of material. With the exception of PHAR 642 (Self Care), which has no correlation, most courses have a weak to moderate correlation with their corresponding sections on the Milestone.

Table 5e: CO 2019: Correlation Analysis of Milestone 1 and P1 courses

Milestone/ GPA	P1 GPA	M1 - 621	M1 - 622	M1 - 631	M1 - 632	M1 - 633	M1 - 634	M1 - 641	M1 - 642	M1 - 661
P1 GPA	1.00	0.33	0.44	0.35	0.40	0.52	0.34	0.47	0.28	0.27
PHAR 621	0.85	0.40	0.26	0.35	0.34	0.48	0.41	0.39	0.32	0.24
PHAR 622	0.83	0.29	0.38	0.31	0.39	0.34	0.11	0.41	0.14	0.27
PHAR 631	0.83	0.22	0.38	0.40	0.35	0.40	0.12	0.44	0.18	0.27
PHAR 632	0.77	0.24	0.28	0.25	0.44	0.53	0.34	0.34	0.33	0.22
PHAR 633	0.84	0.25	0.43	0.24	0.34	0.46	0.38	0.35	0.28	0.10
PHAR 634	0.68	0.17	0.45	0.13	0.16	0.31	0.44	0.25	0.23	0.15
PHAR 641	0.73	0.30	0.18	0.32	0.18	0.32	0.14	0.39	0.23	0.25
PHAR 642	0.78	0.23	0.40	0.14	0.21	0.51	0.26	0.34	0.08	0.24
PHAR 661	0.13	0.03	0.06	0.02	-0.16	-0.06	0.03	0.25	-0.07	-0.02

Pearson correlation; dark blue shading = significant at 0.01 (2 tailed)

For the class of 2019 P1 GPA is a strong to very strong predictor for how well students do in the P1 milestone, suggesting good retention of material; however GPA has no correlation with PHAR 661. Most courses have a weak to moderate correlation with their corresponding sections on the Milestone, while PHAR 642 (Self Care) and PHAR 661 (Introduction to Pharmacy Practice) has no correlation at all with its corresponding section on the milestone; these two courses have been re-sequenced as a result of the implementation of Curriculum 3.0, so the course coordinators will revise their milestone questions before the next milestone takes place to ensure they are representative of the course concepts.

Although some caution needs to be exercised because of the lack of complete data sets, the analysis above does indicate that students are retaining knowledge, and most courses are assessing the concepts delivered in class. Thus the College will continue to administer the Milestone assessments. However, correlations with some courses are weak to non-existent, and the low average class scores overall suggest the students may not be taking the assessment seriously, or that there is a real decline in student performance. Evidence from published research which has examined the use and effectiveness of milestone assessments supports this conclusion, since findings are that students perform better on higher stakes exams, and negative incentives, (such as remediation), and particularly high-stakes negative incentives, (such as failure to progress in the curriculum), are more effective in relation to student performance than positive incentives (such as bonus points).

The analysis and results here were presented to faculty for discussion, resulting in agreement that the Assessment and Curriculum Committees will be asked to reexamine the College's overall milestone strategy, including consideration of re-introducing remediation for those students who do not reach the minimum levels of competency, and what the process would

involve. Through the Assessment Committee course instructors whose courses do not correlate with milestone results have been asked to review and revise milestone questions, and monitoring of this will continue annually.

vi. Pharmacy Curriculum Outcomes Assessment (PCOA)

The PCOA is a tool to measure knowledge in the pharmacy curricula, administered by the NABP, the National Association of Boards of Pharmacy, using validated questions, and standardized to provide score reports so that colleges and students can compare themselves to their peers or to national samples. It has existed since 2008, but in 2016 it became mandated by ACPE as a summative assessment for students nearing the end of the didactic curriculum; it can also be utilized as a formative assessment for P1 and P2 students. It is a computer based exam, and assesses knowledge in four major content areas and 28 subtopic areas (225 questions):

- Basic biomedical sciences (10% of items)
- Pharmaceutical sciences (33% of items)
- Social/behavioral/administrative sciences (22% of items)
- Clinical sciences (35% of items)

The CO 2017 were the first cohort of COP students to take the mandated PCOA. The cohort completed the PCOA at the end of their third year (in May 2016 before starting APPEs) and received personalized score reports in October 2016. We suggested to the students that they use the results to identify areas of weakness as they progress through their rotations and seek help from preceptors and faculty if required. This is considered good preparation for the NAPLEX.

The PCOA was not a hard-stop for the class of 2017 and was administered in 2016 without giving the students any review sessions. May was chosen to administer the PCOA because students had completed their didactic curriculum at this point and were therefore not disadvantaged trying to answer questions about topics they had not covered. The CO 2018 will be the second cohort to take the mandated PCOA, and again it will be administered in 2017 in May, the week before APPE rotations begin.

NABP provides two college level reports. The first of the reports provides data on overall performance by year at the institutional level, with comparisons to the national reference group. Table 6a below shows the mean scores for the total examination as well as the mean scores for the four major content areas. The shaded row is the mean score for all students in a normed reference sample, and can be used as a point of comparison for CNUCOP.

Scaled scores range from 0 to 700 and can be compared between major content areas, so someone scoring 250 in Basic Sciences, for example, and 200 in Pharmaceuticals Sciences demonstrated greater proficiency in the former. Our CO2017 scored 306 overall, against a mean score of 358 in the normed reference sample, which placed these students in the 27th

percentile of exam takers. The cohort fared relatively well in basic biomedical sciences compared to the reference sample, but less well in the three other content areas.

Table 6a: College level report: Mean PCOA scores 2016

Table 1: School/College Score Means – 2016 W2					
		Year 1	Year 2	Year 3	Year 4
Total Score	Scaled Score			306	
	Reference Sample Scaled Score	277	331	358	362
	Percentile for Program Year			27	
Basic Biomedical Sciences	Scaled Score			345	
	Reference Sample Scaled Score	320	349	348	340
	Percentile for Program Year			48	
Pharmaceutical Sciences	Scaled Score			299	
	Reference Sample Scaled Score	281	332	357	356
	Percentile for Program Year			24	
Social/Behavioral/ Administrative Pharmacy Sciences	Scaled Score			278	
	Reference Sample Scaled Score	278	337	358	361
	Percentile for Program Year			24	
Clinical Sciences	Scaled Score			314	
	Reference Sample Scaled Score	252	320	368	389
	Percentile for Program Year			30	
	NUMBER OF STUDENTS			105	

The second table (see table 6b below) reports the percent of items answered correctly on the subtopics from each major content area by program year.

Table 6b: College level report: PCOA scores on sub-topics, 2016

Table 2: School/College Subtopic Mean Percent Correct Scores – 2016 W2									
Sub Topics	# of Items	School				National			
		Yr 1	Yr 2	Yr 3	Yr 4	Yr 1	Yr 2	Yr 3	Yr 4
Basic Biomedical Sciences:	32								
Physiology	10			43		61	69	66	68
Biochemistry	8 - 9			43		45	48	47	47
Microbiology	4 - 5			65		52	60	63	66
Molecular Cell Biology/Genetics	4 - 5			39		62	63	60	66
Immunology	4			43		54	57	53	53
Pharmaceutical Sciences:	60								
Medicinal Chemistry	11 - 12			39		39	51	51	52
Pharmacology & Toxicology	15 - 16			42		38	50	59	61
Pharmacognosy and Alternative & Complementary Treatments	2			73		50	64	76	76
Pharmaceutics	13 - 14			37		45	52	57	53
Biopharmaceutics/Pharmacokinetics	9 - 10			55		39	50	55	56
Pharmacogenomics	0 - 1			-		32	42	54	57
Extemporaneous Compounding/Parenteral/Enteral	7			51		52	56	59	57
Social/Behavioral/Administrative Pharmacy Sciences:	44								
Healthcare & Public Health Delivery Systems	7			58		53	62	65	66
Economics/Pharmacoeconomics	3 - 4			35		48	56	62	54
Pharmacy Management	6			57		58	65	66	67
Pharmacoepidemiology	1			78		63	76	79	86
Pharmacy Law & Regulatory Affairs	5			80		58	68	73	71
Biostatistics & Research Design	5			53		49	63	66	72
Ethics	1 - 2			32		70	76	77	79
Core Communication Concepts & Skills	6			66		79	85	83	87
Social & Behavioral Aspects Encountered in Practice	2			73		68	76	78	78
Medication Dispensing & Distribution Systems	6 - 7			71		58	70	71	76
Clinical Sciences:	64								
Literature Evaluation-Practice Guidelines & Clinical Trials	7 - 8			59		54	67	71	79
Drug Information	6			53		61	71	76	80
Clinical Pathophysiology	19			64		45	57	64	69
Clinical Pharmacokinetics/Pharmacogenomics	5 - 6			50		45	59	64	70
Clinical Prevention and Population Health	5			75		55	66	73	76
Medication Therapy Management- Patient Assessment, Clinical Pharmacology, and Therapeutics	21			49		46	61	74	75

The unshaded column of data shows the mean percent correct score of our P3 students for the sub topics, and the corresponding year 3 column that is shaded is the percent correct in the normed reference sample. Highlighted in the 'School Year 3' column are the subtopic areas where the difference between our students and the normed sample was 10% or greater (i.e., our students performed less well than the sample). The largest gap is in the 'ethics' sub topic area; our students did significantly better in pharmacy law, possibly because it is the last course delivered to our students in semester 6, and immediately prior to taking the PCOA exam.

Individual reports for each student are also produced. These were emailed by the College to the CO 2017 in October 2016. Results of the PCOA were presented to faculty in November 2016, followed by discussion in which the following considerations were addressed: (i) how to get the current P3 students primed for the upcoming PCOA in May 2017, (ii) whether to make curriculum changes based on how the CO 2017 performed in the PCOA, and (iii) whether to make future PCOA assessment a 'hardstop', preventing progress into APPEs if not passed at a minimum level. Further correlation analysis on the PCOA with other academic performance indicators, e.g., NAPLEX scores when available, will also be conducted.

The Director of the Center for Excellence in Teaching and Learning (Dr. Eric Mack) has been tasked with designing a PCOA strategy for the College, to include plans for preparing the P3 students for the upcoming PCOA in May (2017). Based on last year's result the areas of weaknesses (highlighted in the table above) for our students will likely be the focus of review sessions scheduled to take place in the P3 longitudinal practicum. Once more data are available from further PCOA assessments the College will integrate results into our normal assessment processes, so student learning outcomes and curriculum reform continues to be evidence-based.

The NAPLEX assessment

The NAPLEX, or North American Pharmacist Licensure Examination, measures a candidate's knowledge of the practice of pharmacy. It is one component of the licensure process and is used by the state boards of pharmacy as part of their assessment of a candidate's competence to practice as a pharmacist. It is necessary to pass (75% or greater) the four and a quarter hour exam, consisting of 185 questions, to be able to work as a pharmacist.

Exam takers in the first four cohorts that have passed through CNSU (2012 to 2015) were assessed in three competency areas:

- ability to assess pharmacotherapy to assure safe and effective therapeutic outcomes
- ability to assess safe and accurate methods to prepare and dispense medications
- ability to assess, recommend, and provide health care information to promote public health

As a result of changes made to the exam the 2016 graduate cohort was assessed in two main domains/competency areas:

- Ensure safe and effective pharmacotherapy and health outcomes
- Safe and accurate preparation, compounding, dispensing and administration of medications and provision of healthcare products

Overall pass rates are reported by school, state and nationally, showing how many students reached or exceeded the minimum necessary to practice pharmacy (pass rate = 75%); only the overall composite score is used to determine pass/fail. However, a mean total scaled score (0 to 150), and 'Competency Area' scores are reported - on a scale (6 to 18), where a score of 6 is the lowest possible score and 18 is the highest.

Individualized student data can be used for correlational analysis, however, not all students give permission to have their individualized data released to the College – for example, we know from the 2012 annual summary report that 72 of the Class of 2012 took the test during the main 2nd trimester (1 failed); but only 68 students released their data to the College.

Five COP classes have taken the NAPLEX to date (2012, 2013, 2014, 2015, & 2016). The College so far has individualized data for four classes (2012, 2013, 2014, and 2015); individualized data for Class of 2016 will be available some time during January 2017. Analysis of NAPLEX performance follows after a brief description of the College's NAPLEX preparation strategy, below.

vii. COP's NAPLEX and CPJE preparation strategy

For the classes of 2012 through 2015 P4 students took part in weekly summits throughout their fourth year to help prepare them for the NAPLEX – the summits provided the students with an opportunity to practice calculations, and to hone their therapeutic knowledge in major disease areas. These stopped for the P4 students in the Class of 2016 because of a re-organization that took place within the Experiential Education Department.

The weekly summits were replaced in 2016 by the 'Longitudinal Pharmacy Practice Knowledge Exam' (LPPK) which accounts for 30% of the overall APPE mark. For each APPE block students take an open book on-line exam consisting of 100 NAPLEX-type questions prepared by the pharmacy residents and faculty and cover the following areas:

- i. Pharmacotherapy (70 questions)
- ii. Pharmacy calculations (10 questions)
- iii. Jurisprudence (10 questions)
- iv. Biostatistics/literature evaluation (10 questions)

COP also provides P4 students with a 5-day, 60-hour review course, in May, the week prior to graduation and immediately after they have completed their APPEs. The review is provided by an external vendor (PassNAPLEXNow) and the cost is split between the College and the student.

Students are provided with a two-volume study guide by the vendor. P3 students are invited to attend the review course, and they pay a discounted fee if they take it as a P3 and repeat it as a P4; attendance for P4s is mandatory.

The external provider offered follow up support for students who failed the 'capstone' exam taken by the students at the end of the course; to preserve students' anonymity the providers were not given the names of the students – the onus was on the student to make contact with the provider.

The College also provides a 1-day law review as preparation for the CPJE, traditionally conducted by the Professor who taught the law course; however in 2016 the law review was conducted as an on-line course because the instructor left CNUCOP close to the administration date of the review.

Analysis of COP NAPLEX scores (2012-2016)

NAPLEX data are shown in the tables below, including pass rates in comparison with national and state rates, individualized scores by class in the three areas that make up the assessment, and correlational analysis with other student performance data. These data were presented to faculty in November 2016, followed by discussion.

Table 7a: NAPLEX Pass rates

Pass rate/class	2012	2013	2014	2015	2016
CNSU	98.72 (n=78)	89.89 (n=89)	90.91 (n=88)	95.79 (n=95)	88.75 (n=80)
State	98.70	99.20	97.90	97.40	89.89
National	96.93	95.87	94.88	93.86	87.78

Three of the five COP cohorts that have so far taken the NAPLEX have exceeded national rates (2012, 2015, and 2016), shown above in bold.

Table 7b: NAPLEX Individualized scores by class

NAPLEX scaled scores by class	CO2012	CO2013	CO2014	CO2015
# students (# failed first time)	68 (2)	87 (7)	88 (7)	70 (2)
Total scaled score (SD)	106.10 (16.4)	101.18 (17.5)	106.39 (16.7)	105.49 (14.6)
Area 1 score	13.10 (1.2)	12.89 (1.2)	13.00 (1.3)	12.83 (1.1)
Area 2 score	12.30 (1.5)	11.94 (1.6)	12.70 (1.6)	12.70 (1.5)
Area 3 score	12.80 (1.8)	12.16 (1.8)	12.93 (1.5)	12.74 (2.2)

For each of the 4 years shown above our students consistently score lower in competency area 2 (medication dispensing) than the other two areas (highest possible score is 16).

NAPLEX: overall scaled score and correlations with academic performance variables: classes 2012 - 2016

Table 8a: CO 2012

	Adm. GPA	P1 GPA	P3 GPA	Grad GPA	Milestone2	Capstone	NAPLEX
Adm. GPA	1.00						
P1 GPA	-0.06	1.00					
P3 GPA	0.06	0.87**	1.00				
Grad GPA	0.00	0.82**	0.97**	1.00			
Milestone 2	0.05	0.57**	0.66**	0.59**	1.00		
Capstone	0.08	0.19	0.34**	0.32**	0.45**	1.00	
NAPLEX	0.00	0.40**	0.43**	0.46**	0.43**	0.30*	1.00

Table 8b: CO 2013

	Adm. GPA	P1 GPA	P3 GPA	Grad GPA	Milestone1	Capstone	NAPLEX
Adm. GPA	1.00						
P1 GPA	0.17	1.00					
P3 GPA	0.22*	0.92**	1.00				
Grad GPA	0.16	0.90**	0.97**	1.00			
Milestone1	0.08	0.70**	0.69**	0.70**	1.00		
Capstone	-0.01	0.33**	0.42**	0.46**	0.59**	1.00	
NAPLEX	-0.00	0.65**	0.66**	0.67**	0.63**	0.43**	1.00

Pearson correlation; **significant at 0.01 (2 tailed)

Table 8c: CO 2014

	Adm. GPA	P1 GPA	P3 GPA	Grad GPA	Capstone	NAPLEX
Adm. GPA	1.00					
P1 GPA	0.33**	1.00				
P3 GPA	0.35**	0.88**	1.00			
Grad GPA	0.28**	0.84**	0.97**	1.00		
Capstone	0.00	0.28**	0.23*	0.16	1.00	
NAPLEX	0.12	0.66**	0.59**	0.60**	0.16	1.00

Pearson correlation; **significant at 0.01 (2 tailed)

Table 8d: CO2015

	Adm. GPA	P1 GPA	P3 GPA	Grad GPA	Capstone	NAPLEX
Adm. GPA	1.00					
P1 GPA	0.30**	1.00				
P3 GPA	0.30**	0.92**	1.00			
Grad GPA	0.28**	0.88**	0.97**	1.00		
Capstone	0.16	0.50**	0.58**	0.52**	1.00	
NAPLEX	0.03	0.62**	0.63**	0.60**	0.62**	1.00

Pearson correlation; **significant at 0.01 (2 tailed)

The above tables in general show that the overall grade point average (GPA) at admission is not a good predictor of academic performance on the PharmD program: in certain cohorts there is a correlation with P1 and P3 GPA, but it is generally a weak correlation where it exists; the analysis also suggests that overall admission GPA does not correlate at all with performance on the Capstone or the NAPLEX.

However, while the strength of the correlation with graduation GPA varies from cohort to cohort, (see below), in general the NAPLEX overall score and correlations with graduation GPA are consistent and strong, suggesting the students who do well in the program do well in these key assessments:

CO 2012 – 0.46 (p 0.01)
 CO 2013 – 0.67 (p 0.01)
 CO 2014 – 0.60 (p 0.01)
 CO 2015 – 0.60 (p 0.01)

Where we have Milestone data there is a moderate correlation with *Milestones* and NAPLEX scores. NAPLEX overall score and correlation with *Capstone* varied by class also, and were generally weaker than the correlation with graduation GPA:

CO 2012 – 0.30 (p 0.05)
 CO 2013 – 0.43 (p 0.01)
 CO 2014 – 0.16 (ns)
 CO 2015 – 0.62 (p 0.01)

Just looking at the correlations for the class of 2012 (table 8a above), we see that the end of P1 year GPA was a very strong predictor of P3 GPA (0.87), and a moderate predictor (0.4) of NAPLEX score. Similarly, P3 GPA was a strong (0.66) predictor of success on the Milestone 2 exam, a weak predictor (0.34) of the Capstone score, and a moderate predictor (0.43) of NAPLEX. Furthermore, Milestone 2 was a moderate predictor (0.43) of NAPLEX, and Capstone had only a weak correlation (0.30) with NAPLEX.

We will examine NAPLEX and PCOA correlations for 2016 class when the NAPLEX scores are released in January. However, a paper by Naughton et al from 2014 which looked at correlations between PCOA and NAPLEX, showed a correlation of 0.59 (total scores only). Thus, we might expect students who get better GPAs, score higher on Milestone and Capstones (including the PCOA), are more likely to score higher on NAPLEX, so students could use the PCOA as a yardstick to measure their preparation and address deficiencies before taking NAPLEX.

NAPLEX: correlational analysis with scores for individual competency areas: 2012-2016

Correlational analysis was undertaken of the scores in the three competency areas and other performance data, for example, *Milestone* and *Capstone* scores where available, and final course grades in particular courses, or overall GPA for clinical courses. Data were not available consistently across each cohort; the tables below show the analysis conducted for each class.

Table 9a: CO 2012

	Milestone 2	Milestone 2 Mock Board	Capstone	PHAR 853	NAPLEX total	NAPLEX Area 1	NAPLEX Area 2	NAPLEX Area 3
Milestone 2	1.00							
M2 Mock Board	0.79**	1.00						
Capstone	0.45**	0.47**	1.00					
PHAR 853	0.58**	0.49**	0.22*	1.00				
NAPLEX total	0.43**	0.48**	0.30*	0.36**	1.00			
NAPLEX Area 1	0.41**	0.50**	0.35**	0.36**	0.93**	1.00		
NAPLEX Area 2	0.39**	0.33**	0.20	0.29*	0.86**	0.72**	1.00	
NAPLEX Area 3	0.19	0.16	0.10	0.31*	0.57**	0.55**	0.46**	1.00

While we know that the *Milestone 2* score for the 2012 cohort was a moderate predictor of their NAPLEX total scaled score, this table suggests it is also a moderate predictor of how well the students do in competency areas 1 and 2 but not area 3.

The *Capstone* score is a weak to moderate predictor for the NAPLEX total scaled score and area 1, but there is no correlation for areas 2 and 3. Taking just one P3 therapeutics course (PHAR

853) to explore any correlation between specific classes and NAPLEX competency areas, we can see that this course is a weak to moderate predictor for the three different competency areas.

Correlations and trends are not consistent across the cohorts, for example, for the CO 2014 there is no correlation between the Capstone and any of the NAPLEX scores, while for the classes of 2013 and 2015 Capstone correlates moderately (CO 2013) to strongly (CO2015) with all (overall and area) NAPLEX scores.

Table 9b: CO 2013

	Milestone 1	Capstone	PHAR 853	P3 Clinical GPA	NAPLEX total	NAPLEX Area 1	NAPLEX Area 2	NAPLEX Area 3
Milestone 1	1.00							
Capstone	0.59**	1.00						
PHAR 853	0.40**	0.41*	1.00					
P3 Clinical GPA	0.48**	0.39**	0.71**	1.00				
NAPLEX total	0.63**	0.43**	0.41**	0.47**	1.00			
NAPLEX Area 1	0.60**	0.44**	0.41**	0.49**	0.90**	1.00		
NAPLEX Area 2	0.54**	0.35**	0.35**	0.35**	0.72**	0.85**	1.00	
NAPLEX Area 3	0.53**	0.28**	0.29**	0.25*	0.66**	0.75**	0.61**	1.00

Table 9c: CO 2014

	Capstone	P3 Science GPA	P3 Clinical GPA	NAPLEX total	NAPLEX Area 1	NAPLEX Area 2	NAPLEX Area 3
Capstone	1.00						
P3 Science GPA	0.19	1.00					
P3 Clinical GPA	0.15	0.89**	1.00				
NAPLEX total	0.16	0.21*	0.40**	1.00			
NAPLEX Area 1	0.14	0.34**	0.49**	0.88**	1.00		
NAPLEX Area 2	0.12	0.07	0.21*	0.82**	0.59**	1.00	
NAPLEX Area 3	0.13	0.24*	0.17	0.47**	0.36**	0.34**	1.00

Table 9d: CO 2015

	Capstone	P3 Science GPA	P3 Clinical GPA	NAPLEX total	NAPLEX Area 1	NAPLEX Area 2	NAPLEX Area 3
Capstone	1.00						
P3 Science GPA	0.39**	1.00					
P3 Clinical GPA	0.59**	0.75**	1.00				
NAPLEX total	0.62**	0.38*	0.61**	1.00			
NAPLEX Area 1	0.59**	0.36**	0.57**	0.87**	1.00		
NAPLEX Area 2	0.57**	0.24**	0.50**	0.82**	0.63**	1.00	
NAPLEX Area 3	0.35**	0.18	0.38**	0.56**	0.42**	0.40**	1.00

CPJE pass rates for COP compared with state rates

Pass rates for COP students are generally favorable when compared with state rates, with three cohorts having higher pass rates while two cohorts have lower ones.

Table 10: CPJE pass rates for COP graduating classes

Description	Class of:				
	2012	2013	2014	2015	2016
CPJE pass rate - CNUCOP	98.50	86.70	92.70	89.70	92.2
CPJE pass rate - California	95.10	89.60	92.50	92.60	81.9

viii. Student awards

The students at California Northstate University College of Pharmacy are heavily involved in student organizations and fraternities that are dedicated to not only facilitating community service events but also to hosting knowledge-based pharmacy competitions. At local competitions hosted by our student organizations and/or fraternities, students' clinical knowledge is evaluated and the winner of local competitions travels to compete in state, regional, and national competitions. As a result, a number of our students have been recognized at the state, regional, and national level for their notable achievements in patient counseling competitions, clinical skills competitions, and quiz bowl competitions, to name a few. A significant number of our students are also engage in research with faculty mentors and have received recognition at California Northstate University's Research Day for their poster presentations. Our CAPSLEAD team also travels to regional and national meetings to present their research projects in a poster format at least once a year.

Examples of some recent awards and recognitions received by our students from 2015 through 2017 are provided in the box below:

Awards

Paul Bankole received a Certificate of Appreciation from the American Cancer Society at the “Making Strides to End Cancer” event (2015).

Lilit Hovnanian received an Outstanding Service Award for high standards of excellence in community service (2015).

Anahita Malekakhlagh received the Excellence in Research Award (2015).

Gevorg Martirosyan was elected National President-Elect for the Student National Pharmaceutical Association (SNPhA).

Pachai Moua received first place for her presentation of research at the First Annual International Health Care Symposium Poster Competition (2016).

The Student Societies of Health-System Pharmacists (SSHP) received an Outstanding Professional Development Project Award (2016).

California Northstate University College of Pharmacy has been given the honor of hosting the Student National Pharmaceutical Association (SNPhA) Regional Conference in March (2017).

Competitions

Melissa Kimura won second place at the Student National Pharmaceutical Association (SNPhA) Clinical Skills Competition at the national conference in Orlando, FL (2016).

Joseph Prioriello won second place at the Student National Pharmaceutical Association (SNPhA) Clinical Skills Competition at the national conference in Orlando, FL (2016).

Melissa Kimura won second place at the national Kroger Division 1 Patient Counseling and Clinical Skills Competition (2016).

Joseph Prioriello won second place at the national Kroger Division 1 Patient Counseling and Clinical Skills Competition (2016).

California Northstate University College of Pharmacy students received third place at the California Society of Health-System Pharmacists Quiz Bowl Competition in Anaheim, CA (2016).

Grants

The Student Societies of Health-System Pharmacists (SSHP) received a grant for \$1,260 from the California Society of Health-Systems Pharmacists to support continuation of its Vial of Life program (2015).

Scholarships

Lilian Allahverdian received The Rite Aid Endowment Scholarship, a historic and prestigious award dedicated to promoting the profession of pharmacy and aiding in the education of the future pharmacist (2016).

In addition to various awards made externally to our students, as detailed above, California Northstate University College of Pharmacy also makes available a number of different scholarships and awards (approximately 15) to qualifying pharmacy students. Scholarship and award criteria vary but are typically based on academic performance, financial need, community outreach involvement, and professionalism or leadership skills. Each one has different eligibility criteria and students can make individual applications to any number of scholarship and/or awards. The de-identified applications are reviewed by the College’s Scholarship and Award committee. Rubrics are used to evaluate each scholarship, and award recipients are selected based on rubric score. All scholarship and award recipients are recognized and honored at the *Scholarship and Awards Ceremony*, held in April of each year. The table below lists all the scholarship awards made in 2015-2016, along with the sponsor and value of the award.

Internal awards to students in 2015-2016

Scholarship/Award	Recipient Name (Class)	Amount	Donor/Contact
COP Scholarships/Awards			
Student of the Year	Ayesha Amin (2019)	\$500	Walgreens
Student of the Year	Justin Ko (2018)	\$500	Walgreens
Student of the Year	Zohra Ismail (2017) Shirin Golzari (2017)	\$500	Walgreens
Rising Star (P3)	Irene Huang (2017)	\$500	Walgreens
Super Star (P4)	Henry Yu (2016)	\$500	Walgreens
Dean/Faculty Scholarship	Stefanie Stafford (2017)	\$500	COP dean/faculty donations
Dean/Faculty Scholarship	Justin Nguyen (2017)	\$500	COP dean/faculty donations
P4 Student Scholarship/Awards			
Natural Standard Research Collaboration Award	Jessica Sheffler (2016)	\$0, subscription	Lisa Rutta
Lilly Achievement Award	John Promlap (2016)	\$0, book	John Poulin
Teva	Kimberly Han (2016)	\$250, plaque	Suzanne Collier
Mylan Award	Myron Phillip Todd (2016)	\$250	Ramona Thukral
Walgreens Diversity Scholarship	Kim Cao (2019)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity Scholarship	Aiko Melanie Flores (2018)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity Scholarship	Josephine Wong (2018)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity Scholarship	Linh Doan (2018)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity Scholarship	Huyen Vu (2018)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity Scholarship	Shaghayegh Tareh (2016)	\$500	Satinder Sandhu and Tom Bui
Walgreens Diversity and Inclusion Excellence Scholarship	Margarita Belilovskaya (2018)	\$2000	Satinder Sandhu and Tom Bui

ix. Student satisfaction

Data on student satisfaction with and views about the College and their experiences are derived from two main sources: annual surveys conducted electronically by the American Association of Colleges of Pharmacy (AACCP), and CNU's own internal institutional survey, introduced in 2016 in order to gather supplemental data specific to the College. This was conducted electronically, using SurveyMonkey, and administered and overseen by the COP Assessment Committee. Results are anonymous, neither are mandatory for students to complete, and response rates

overall are low (see Table 11). Thus, while individual results from any given year are interpreted and acted upon with caution, they are useful for indicating trends, and they allow the College an opportunity to reflect on student perceptions.

Table 11: Response rates for AACP and CNSU student surveys

Number (response rate)	2012	2013	2014	2015	2016
AACP Alumni Survey		9/83 (10.8%)	27/171 (15.8%)	11/253 (4.3%)	NA
AACP Graduate Survey	20/86 (23.2%)	9/88 (10.2%)	37/90 (41%)	6/98 (6.1%)	38/96 (40.4%)
CNSU Graduate Survey					46/96 (48%)

The AACP Graduating Student Survey of 2016 asked 79 questions, divided into eight sections addressing students' views and/or experiences on IPE, curriculum, pharmacy practice experiences, student services, educational resources, and overall impressions of the College and the profession. Summary results from the latest (2016) AACP Graduating Student Survey can be found in *Appendix 15*. The University's Graduating Student Survey of 2016 asked students questions that were more specific to their time at CNSU, such as views on TBL and the PassNaplexNow Board review course, and whether they would recommend the program. A summary of the results from the 2016 CNU Graduating Student Survey is given in *Appendix 16*.

In the 2016 AACP Graduating Student Survey respondents generally reported high levels of satisfaction, with general agreement of approximately 80% or higher, in the areas of inter-professional education and professional competencies, outcomes, and curriculum. Respondents reported general satisfaction with the varied experiences offered in the Introductory Pharmacy Practice rotations, with at least 73% agreement (e.g., students gained involvement in direct patient responsibilities in community and institutional settings); students were similarly positive about the Advanced Pharmacy Practice Experiences with at least 80% agreement (e.g., students engaged in direct patient care in a community, ambulatory care, hospital or health-system pharmacy, and inpatient/ acute care settings).

An area for commendation is that respondents reported their pharmacy practice experiences allowed them direct interaction with diverse patient populations (94.8% agreement) and allowed them to collaborate with healthcare professionals (94.7% agreement). An additional component of students' positive educational experience was that preceptors modeled professional attributes and behaviors (81.6% agreement) and preceptors provided students with individualized instruction, guidance, and evaluation (84.2% agreement). Respondents also reported high levels of satisfaction of the College for its support of students' professional organizations (89.5% agreement) and students' participation in regional, state, or national pharmacy meetings (78.9% agreement).

In the area of student services, respondents reported that the school provided limited career planning guidance and financial aid advising. Additional financial aid advising sessions were added to the candidate interview days in 2016, and financial aid met with each of the current cohorts and worked with any student who expressed a desire for assistance. In general, respondents noted that the school's communication about events and timely address of student concerns is an area that can be improved. Plans for improvement of communication across the university are already underway, including the creation of a policy for the timely and appropriate dissemination of information from the Board of Trustees and the President's Executive Council to constituencies. Negative feedback received in open comments from the students about the 2016 graduation ceremony, about turnover and retention of faculty, and lack of federal financial aid, have all been noted and are being addressed at the Institutional and College levels.

As well as current students, alumni are surveyed about their experiences at the College and results are used to evaluate the program and make appropriate changes. Feedback from earlier AACP Alumni Surveys which highlighted views on the small range and lack of elective choice played a role in curricular revision and improvement the following academic year. With only three topics offered for electives in both the Fall and Spring semesters of the 2013-2014 academic year the College made a special effort to expand the choice of electives on offer to students: in Fall 2015 students were offered a choice of seven electives (one was offered on-line, and one was delivered in the week before the semester started), and they included a range of advanced clinical topics, as well as topics from the behavioral sciences. In the following Spring semester, five electives were offered - one from the clinical department and four from the sciences department.

d) Faculty

i. Faculty credentials

Faculty and their credentials are listed alphabetically in *Appendix 17*. All faculty has either a PharmD or PhD. Specialties and/or disciplines represented include: Cardiology, Medicinal Chemistry, Psychiatry, Law, Infectious Disease, Social Pharmacy and Clinical and Administrative Sciences. The CAS department faculty are either residency trained, or have post-doctoral fellowships, and Institutions where faculty earned their degrees include Schools of Pharmacy in the United Kingdom, other California Colleges of Pharmacy, or institutions elsewhere in the USA, including George Washington University, Duke University, University of Texas, Idaho State University, and Massachusetts College of Pharmacy.

Table 12 identifies the current or future practice site plans of the clinical faculty. Five have practice sites: in community pharmacy, at a general hospital, at a family medical clinic and in a military medical group; three faculty are seeking out sites for potential placements.

Table 12. Faculty Practice Sites and Future Plans

Faculty Name	Practice Site	Comments
Diana Cao	(In Progress) Dignity Health Heart & Vascular Institute, Mercy General Hospital Sacramento, CA	Affiliation agreement under legal review
Tony Eid	9 th Medical Group, Beale Air Force Base Beale Air Force Base, CA	Co-Chair, Department of Experiential Education
Joe Hubbard	Don's Pharmacy Reno, Nevada	-
Sukhvir Kaur	Family Medicine Clinic, Sutter Medical Center Sacramento Sacramento, CA	-
Justin Lenhard	To Be Determined	Waiting for California Registered Pharmacist Licensure Potential site: Woodland Memorial Hospital, Woodland, CA
Welly Mente	To Be Determined	Activity seeking out potential site for placement
Martha Pauli	Eskaton Facilities Sacramento, CA	Co-Chair, Department of Experiential Education
Sam Rasty	Family Medicine Clinic, Sutter Medical Center Sacramento Sacramento, CA	-

ii. Teaching quality and effectiveness: students' evaluation of faculty and courses

Towards the completion of the semester all core and elective courses and their instructors are evaluated by the students using an anonymized electronic questionnaire administered through SurveyMonkey. (See *Appendix 18* for the Course/Faculty Evaluation questions). Questions were revised in spring 2016 to enhance feedback specific to TBL delivery and to ensure 360 degree evaluation of the instructors' teaching skills. The process is carried out by the department's administrator. A link to the questionnaire is shared with the students in the classroom by the department's administrator. At the completion of the semester, and once all course grades are reported to the Office of the Registrar, the respective department Chair shares the course and instructors' evaluations with each faculty.

In general students were satisfied with the delivery and the content of the courses taught by the faculty. Student's satisfaction on many components of the courses was close to 100%. A general trend is the students' request for summary review of the key concepts, and request for more time to be dedicated to difficult topics. In the most recent round of evaluations a request was made by students to limit the number of instructors for each course.

iii. Research and scholarship

Faculty in COP are encouraged to engage in research and scholarly activity and various initiatives are in place to help support their development. These initiatives include annual development funds of \$3000 each that faculty can use to support research, conference attendance or other professional development. The University also supports a continuing education program, a series of monthly Research seminars, and ad-hoc training seminars in topic areas that have been identified by faculty in regular surveys asking about development needs. These have included sessions on preparing research manuscripts, applying for industry grant funding, on TBL, on preparing rubrics, and on assessment best practice.

In brief Faculty accomplishments between 2014 and 2016 include 27 manuscripts, books, and book chapters; 35 podium/poster presentations; 12 grant applications, including one that lead to an NIH grant, two external animal research grants, and two annual internal seed grants. A list of the faculty's publications (2014-16) can be found in *Appendix 19*.

iv. Development opportunities for teaching

The College of Pharmacy provides intensive training in TBL instruction for new and experienced faculty. As part of the orientation, new faculty receive hands-on training to learn and practice TBL techniques and they are expected to shadow experienced faculty to observe a TBL session in class. In 2016 two orientation sessions were organized, one in July attended by 5 faculty, and one in August, attended by 2 faculty and four residents. New faculty also are assigned a short and long-term mentor for continuous training on TBL techniques (see section 3b (vi) for more detail about the mentoring scheme). On-going development opportunities specifically around teaching are multi-faceted and include:

1. On-Campus TBL workshops to share TBL best practice and emerging information
2. Funding of Educational Scholarship through educational grants
3. A discretionary fund for faculty to attend local and national conferences on TBL pedagogy

Two on-campus workshops were held in 2016, one in January entitled: "Jeopardy-style exam review in a TBL class using team-clickers", a university-wide event attended by COP and COM faculty. The second event, conducted by 3 experienced TBL faculty was a training session entitled: "Design and facilitation of successful team-based learning"; this was attended by 11 COP faculty and two P4 students.

In 2016 three faculty were supported to attend the TBLC National Conference (March 2016), and one faculty attended a regional TBL conference in San Francisco. While TBL is naturally a focus of many of the development opportunities sought by faculty, others include The Teaching Professor Conference, attended by an associate professor in 2015 in Georgia, Atlanta; and in the last five various faculty have attended a number of different WASC conferences or educational programs. Finally, one education grant, worth \$2000, was awarded to Dr. Ruth

Vinall, for a project entitled: “Use of Mini-application Exercises to Enhance Student Performance in a team-based learning setting”

v. Awards and recognition

The College has a variety of internal institutional awards and recognitions for faculty and staff that are offered on an annual basis to recognize service or contribution to the university and/or College. The process for nominating faculty and staff for the awards and identifying recipients has changed over the time period covered by the review, but for the most recent round of awards (see below) faculty and staff could either self-nominate or be nominated by a peer, and recipients were evaluated using a rubric based on specific criteria set forth by the Scholarship and Awards Committee.

Faculty/staff awards 2015-16

Faculty	Faculty Researcher of the Year (voted by faculty)	Dr. Andromeda Nauli	plaque
Faculty	Faculty Service Award (voted by faculty)	Dr. Suzanne Clark	plaque
Faculty	Teacher of the Year (voted by CO 2019)	Dr. Ruth Vinall	plaque
Faculty	Teacher of the Year (voted by CO 2018)	Dr. Tiffany-Jade Kreys	plaque
Faculty	Teacher of the Year voted by (CO 2017)	Dr. John Cusick	plaque
Staff	Staff of the Year (voted by staff)	Nicole Jepsen	plaque

The College’s faculty have also been the recipient of a number of external awards and recognitions over the time period covered by the review, including a 2014 Research Fellowship Award from the American Academy of Advertising to Dr. Nilesh Bhutada; the Outstanding Chapter Advisor Award for the Phi Delta Chi-Gamma Iota Chapter at the Leadership Development Seminar for Dr. Sonya Frausto in 2014; the Pharmaceutical Scientist Team of the Year Award from the Royal Pharmaceutical Society of Great Britain for Dr. Hassell in 2015.

vi. Faculty satisfaction

The American Association of Colleges of Pharmacy (AACP) conduct faculty surveys each year for voluntary completion. Anonymized results are published in table form and findings can be benchmarked against national data and comparator institutions, including public or private universities. The response rate for the 2014 survey was very low, so special efforts were made in 2015 and 2016 to highlight the importance of the survey and to encourage a higher response rate (Table 13). Response rates improved considerably for 2015 and 2016, and in fact exceeded comparator private universities nationally (79% and 81% respectively).

Table 13: CNSU internal and AACP Faculty Surveys: 2013 – 2015

	2013	2014	2015	2016
AACP Faculty Survey	NA	12/31 (39%)	33/35 (94%)	25/26 (96%)
COP College Survey	N = 19/21 (90%)	N = 18/24 (75%)	N = 23	19/27 (70%)

The AACP survey includes 65 Likert questions divided into 6 sections covering satisfaction with topics such as faculty development, the administrative system, roles and governance, curriculum, teaching and assessment. Summary results from the latest 2016 Faculty Survey for COP are provided in *Appendix 20*. Statements about the PharmD curriculum, teaching and assessment, and statements about developing and supervising students, received high levels of agreement (80-100%), signifying high satisfaction with these aspects of the program. Some areas received lower and less favorable ratings, including aspects of administration and governance, promotion and tenure, workload, and faculty and staff resource.

In the 2014 internal survey of faculty and staff, conducted by the Office of Institutional Effectiveness, staff reported they felt information technology resources have increased since the previous year, helping them better perform their jobs. Faculty reported that a more balanced workload was necessary; the college investigated this further by conducting a detailed workload analysis of all faculty and adopted a policy to repeat these analyses regularly. In the 2015 faculty and staff satisfaction survey, an area of concern for both groups was retention. Faculty also expressed the need for stronger mentorship in their positions so that they may better serve the students and the college. These concerns are being addressed with more robust faculty and staff retention plans and a well-defined and established mentorship program for new and current faculty. Finally, staff and faculty report that communication across the university requires improvement (2016 satisfaction survey: 74% of staff and 61% of faculty).

Areas of high satisfaction on the most recent (2016) internal satisfaction survey include the following: faculty report that the university is fulfilling its educational and service goals (more than 85% of respondents), that they are satisfied with their area(s) of service (more than 90% of respondents), and that they are satisfied with the topics they are teaching (100% of respondents—and this survey had a 74% response rate). Staff report that their work is respected and valued by colleagues (more than 80% of respondents), that they have had opportunities at work to learn and grow (more than 80%), that they have sufficient flexibility in scheduling (more than 83% of respondents), and that they are satisfied with the type of service that they are involved in (more than 83% of respondents—and this survey had and 87% response rate).

3. Program viability and sustainability

a) Demand for the program

Table 14 below shows the number of applications to the College and the number of students entering the program.

Applications to the program have fluctuated year on year, but show a gradual decline since the highest number experienced in 2010. In comparison to the period covered in the last program review the College is interviewing more students and making a greater number of offers. However, the percentage of offers to matriculants has declined.

While enrollment dropped significantly for the class of 2019, the general trend since the first intake of students has been an increase in class size year on year, growing by 42% from the first class (CO 2012) up to and including the class of 2020.

Table 14: Number of Applications and Enrollments: 2008-2016

Applicant data/yr of admission	2008	2009	2010	2011	2012	2013	2014	2015	2016
# of applications	344	1784	1839	1795	1588	1385	1361	1112	1116
# interviewed	207	400	363	329	442	382	420	368	533
# of offers	136	177	198	231	382	292	349	313	510
% of interviews to applicants	60%	22.4%	19.7%	18.3%	27.8%	28%	31%	33%	48%
% of offers to interviewed	66%	44.3%	55.6%	70%	86%	76%	52%	85%	96%
% of offers to matriculants	65%	51%	50.5%	46%	28%	39%	35%	22%	25%
Number admitted	89	90	100	106	107	114	121	68	126

The drop in enrollment in 2015 was in part related to national trends, with recent application rates to pharmacy schools falling in most places; however, evidence from internal review and surveys suggest other factors could have had an impact, such as the lack of Title IV federal funding for student loans. Such a large drop in enrollment resulted in 2015 in the College reviewing its admissions requirements and admissions processes. The College also reviewed the admission requirements of other California schools. Thus changes were made to the pre-requisites, the Admissions process was overhauled and included the introduction of MMI interviews and speedier offers made to suitable candidates; in addition the University secured favorable loan agreements for students' financial aid packages. These initiatives helped the College achieve the larger class size of 126 for the admission year 2016.

The College's enrollment management plan is currently under review. Administrative growth and changes in the University and the College mean that discussions about enrollment are now more complex and involve more constituents, during a time when there also is greater competition for students. The College is thus currently in the process of drafting an enrollment management plan which considers the recruitment, admission and retention of a diverse student body against this backdrop of change and heightened competition.

The College has monitored the application and enrollment rates and adapted and streamlined its admission requirements, processes and policies to ensure as far as possible that target numbers for intake are reached, and the program remains viable. Before 2015, applicants were required to obtain a Bachelor's degree prior to matriculation and hold a cumulative GPA of at least 2.8. This is within the range of other schools in California (2.5 to 3.0).

Beginning in 2015, the Bachelor's degree requirement was removed. This decision was reached and approved by faculty after a detailed review was undertaken, led by the Office of Academic Affairs of published research reporting links between student achievements and performance at admission with subsequent performance on the PharmD program. Requirements of competitor institutions were also evaluated and faculty agreed to adjust the College's admissions criteria. Thus, the psychology and economics pre-requisite courses were removed, since a number of other pharmacy programs within California did not require these pre-requisite courses. One year of English Composition coursework was added to our pre-requisites to ensure all students were proficient in college-level English reading and writing. Making the PCAT a mandatory requirement was voted against since no other California program required it. The current admission requirements are included in *Appendix 21*.

In addition to changes in pre-requisite coursework, some modifications were made to streamline the admissions process. Before 2015, the admission advisors reviewed applications and subsequently invited qualified applicants for onsite interviews. Faculty review of the applications did not occur until after the onsite interviews had been completed. For the last two rounds of admissions, the admission advisors verify that each application is complete and then assign faculty to provide pre-interview rubric screens, which are conducted electronically on WebAdmit, for each applicant. Faculty then determine if the applicant should be invited for an onsite interview and have the opportunity to identify any "red flags," which require additional review by the Admissions Committee.

Prior to 2015 onsite interviews had previously been conducted every four to six-weeks starting in late September of each year. Beginning in the 2015-2016 admissions cycle, onsite interviews are now scheduled to start in early Fall (late August or early September) and are held more frequently (every 1 to 2 weeks). Prior to 2015, the Admissions Committee met to review the applicants three to four weeks after each interview, and then determined if an offer of admission should be made. This process has been streamlined and now all applicants are voted on within three days after the onsite interview; students who are accepted into the program are offered admission within 7 to 10 days after the onsite interview.

Over the past few years, adjustments have also been made to the composition of the actual interview day. Beginning in 2014, a presentation from the Experiential Education Department was added to the itinerary for each interview day, to enable more information to be provided regarding IPPE and APPE rotation requirements. Additionally, in 2015, a presentation from the Financial Aid Department was added to each interview day and starting in 2016, presentations by the Office of Student Affairs and Office of Research, which provided information on student

services and research opportunities, respectively, were also added to the interview day itinerary. Additionally, the multiple mini-interview format was adapted for onsite interviews beginning in 2015 to better evaluate applicants' critical thinking skills and to enable more faculty to interview and evaluate each applicant. Applicants also undertake a writing exercise as part of the assessment of their communication skills.

Prior to 2015, few efforts were made to ensure that the students who confirmed with the College would maintain their interest in the program. Beginning in 2015, in an effort to retain students who have confirmed their enrollment, our Outreach and Admissions Advisor began to hold *meet-and-greets* periodically throughout different geographical areas within California. These *meet-and-greet* events serve as opportunities for incoming students to meet with an admissions advisor in a small-group setting and to meet with other incoming students to begin to establish relationships. The new Admissions process was the subject of a poster presentation at a recent professional meeting and a subsequent paper.⁴

In 2015 the College introduced an on-line survey administered to interviewees to ascertain the College's strengths and weaknesses regarding the interview process, their experiences on interview day, and subsequent follow up. Summary results from the 2015-2016 survey and action plan for 2016 are in *Appendix 22*. The findings overall were generally positive; however comments from 45% of those who replied suggested that interviews with Faculty were too short. In 2016 interview times were therefore increased to allow applicants more time to 'showcase' themselves and ask questions of the faculty or student interviewing them. Other areas for improvement were identified, including providing an itinerary 48 hours in advance of the interview day, and having faculty join the interviewees for lunch.

In 2016 the College also administered a survey to applicants who declined an admissions offer to ascertain their reasons for not accepting a place and to gather evidence for making changes to the admissions process or cycle. Location of the campus and lack of federal financial aid were the two main reasons identified by these applicants for turning down an offer, but comments from some also suggested speedier decisions by the College would assist students. For this years' admission cycle changes were made which included providing students with an admission decision within one week of their interview.

b) Faculty resources

i. Number and rank

Currently the College employs 29 faculty. The majority of faculty work full-time, 6 work part-time. Most of the associate professors are based in the PBS department, while the majority of assistant professors are based in the CAS department. The student:faculty ratio is 13.6:1 (312 P1 – P3 students and 22.9 FTE faculty with advisor duties).

Table 15: Summary of Current Faculty Rank – @ December 2016

Rank	Headcount - CAS	Headcount - PBS	Headcount - EED	Headcount - all
Professor	2	1	0	3
Associate Professor	1	8	1	10
Assistant Professor	7	2	3	12
Instructor/Adjunct	4	0	0	4

Presently 25 faculty professors have their own individual office, while 4 part-time adjuncts/instructors share. Each office is private allowing for the faculty to meet with and advise their students. Faculty have office hours on campus, which are stated in the course syllabi, and are also available by email. Staff also have individual offices. Each office is equipped with a computer linked to the internet and to workroom printers.

ii. Faculty retention

While the College maintains appropriate numbers of faculty in specialized subject areas that are needed to deliver the program, this has not been without challenge, as table 16 shows:

Table 16: Summary of Faculty Hire & Separation Data

Year	# Hired	# Separated
2007	4	
2008	5	-
2009	6	-
2010	7	-
2011	10	1
2012	3	2
2013	8	6
2014	10	6
2015	6	15
2016	8	8

The College recognizes that some turnover is inevitable, with some of the departing faculty moving on to higher ranking academic positions in new Pharmacy Colleges elsewhere; occasionally some turnover is also desirable and beneficial to the healthy functioning of the college; turnover also occurs when a change in direction or leadership happens, such as when a new Dean is hired. So while some degree of faculty attrition is unavoidable, the College nevertheless has experienced higher than usual turnover over the last two years, and is currently exploring how to improve retention on the one hand, and how to improve recruitment on the other. The university is currently implementing its updated Recruitment and Retention Plan, which includes a training program for department chairs, the creation of policies to ensure regular analysis of compensation packages, the implementation of a higher pay scale, a more competitive benefits package with options for long-term care, a new 401K plan, the implementation of a long-term mentoring program, increased use of multi-year

contracts and timeliness of contract renewals, performance metrics for all levels of university management that include retention as a goal, and an increase in the already large number of faculty development opportunities.

Actions aimed at improving retention have thus far resulted in some improvements, with the number of faculty departures in 2016 half that of the previous year's. The institution prides itself on the high caliber of its faculty and seeks to attract and retain excellent faculty who are focused on cultivating best practices in teaching and learning; hiring committees are working with Human Resources to incorporate behavioral interviewing techniques to improve vetting for strength of faculty commitment to student success.

iii. Workload

An ad hoc committee was established at CNUCOP in 2014 and was tasked with developing a mathematical model for calculating faculty workload. Results from this workload analysis demonstrated that the faculty allocation of effort for the Pharmaceutical and Biomedical Sciences Department was 39%, 34%, 22%, and 5% for service, teaching, scholarship, and professional development, respectively. Faculty allocation of effort for the Clinical and Administrative Science department was 24%, 39%, 18%, 14%, and 5% for service, teaching, clinical practice, scholarship, and professional development, respectively. A scholarly paper⁵ detailing the workload analysis procedures and key results has been published in the American Journal of Pharmaceutical Education (AJPE).

Overall, this workload analysis demonstrated relatively equitable load, but with a need to ameliorate College service burdens among faculty as well as innovate strategies to provide faculty with longer periods of protected time for the pursuit of scholarly activities. In an attempt to reduce the amount of time dedicated to service, College administration has reduced committee involvement for faculty by reducing both the number of committees and the number of faculty serving on each committee.

Several faculty have departed the College since 2015 which resulted in an increase in teaching load for the remaining faculty. In general, faculty in clinical practice are expected to teach 60 contact hours per academic year. The contact hour requirement for non-clinical faculty and administrators are 90 hours and 30 hours, respectively. The College is aggressively recruiting new faculty to reduce the teaching load among current faculty.

The College recognizes that comprehensive workload analysis should be conducted on a regular basis. Discussion regarding the frequency of workload analysis is currently ongoing. It should be noted that while workload analysis conducted using the mathematical model described earlier provided useful information on workload distribution, this process was very time consuming. A simplified analytical method is currently used by the College so workload analysis, and any necessary adjustments, can be made on a more regular basis.

iv. Faculty annual performance review

The performance of faculty and staff has been evaluated annually since the College's inception. The annual evaluation form however, was amended in 2016 to strengthen the process by obtaining more specific feedback from different constituents throughout the academic year. The revised form was shared with faculty for their input. The final approval was obtained from the Dean's Executive Committee (DEC) before implementation. The process is initiated with the faculty's self-evaluation and proceeds by submission of their part of review to the Department Chair according to an established timeline. During the individual meeting with the Department Chair, the faculty's accomplishments, strengths and needs for improvements in the areas of teaching, scholarship, service and collegiality, based on performance during the previous academic year, are reviewed, discussed, documented, and agreement reached about short (one year) and a long term (five year) goals. The Department Chair then includes a narrative summarizing the overall evaluation and performance and a recommendation for contract renewal is made. The final step of the process is to review the evaluations' documents with the Dean. The completed form, with signatures from the faculty member, Department Chair and the Dean is submitted to the Office of Human Resources and an electronic copy is shared with the faculty and the Office of the Dean. (Please see *Appendix 23* for the Faculty Annual Performance Evaluation Form).

A similar procedure is implemented for staff annual evaluation.

In 2015 and 2016, all faculty and staff evaluations were completed by the Department Chairs and submitted to the Dean and subsequently to the Office of Human Resources by April 15.

v. Peer observation of faculty teaching

To assist individual faculty members in identifying strengths and weaknesses, and to enhance their teaching skills, faculty are also evaluated by their peers. Starting in 2011, these reviews have taken place every year since. Each faculty is peer-reviewed once a year, in whatever semester the majority of their teaching takes place. The peer observation form was revised in Fall 2016 to enhance feedback specific to TBL delivery, and to ensure proper documentary evidence was in place to feed into the Annual Performance Review in April. At the beginning of each semester, a schedule with the date of the observation and the reviewer's name is created by the Office of Academic Affairs with input from the Department Chairs. The process is as follows:

- The observed faculty provide all the pre-class materials to the observer at least one week in advance of the observation date.
- The observer attends the class for its entire duration on the day of observation and may ask students questions to ascertain whether the class is representative of the faculty delivery.
- Upon completion of the observation, the observer and faculty meet to review and discuss the feedback.

- A copy of this completed review form is shared with the observed faculty, Office of Academic Affairs and the respective Department Chair no later than one week after the observation.

In general, most faculty earn a 'developed' to 'proficient' rating in the majority of areas of teaching. Classes are well-organized and start promptly, adequate guided reading is provide in a timely manner. The fundamental concepts are re-emphasized during the readiness assurance tests and in-class application exercises are written in a manner to promote in-depth discussion of the subject matters. Students are encouraged to engage in team and class discussion. In most cases it appears that students feel comfortable asking questions and can speak freely. In the 2015-2016 academic year evidence suggests there was an improvement in TBL facilitation across all classes, arguably due to the effectiveness of the internal TBL workshops organized for faculty and the support for faculty to attend educational conferences on active teaching and learning. However, encouraging students' participation in class discussion and diversifying the type of application exercises were the area of improvements identified most frequently. These two concerns will be addressed when the next TBL training workshops are scheduled. (See *Appendix 24* for a copy of the Peer Teaching Observation Form).

vi. Mentoring

The College formed an Orientation, Mentoring and Faculty Development Committee in 2012-13 with the remit to devise an on-boarding and orientation process for new College faculty and staff, and to explore whether a mentoring program was required and what it would entail. Orientation sessions were developed and organized first by the College for all new faculty and staff; the orientation process for new staff was later subsumed into the institutional HR department, but faculty are still on-boarded via activities scheduled by the Committee, with sessions from HR included. With input from faculty the Committee went on to design a mentoring scheme which was voted on and approved by Faculty in 2015 (see *Appendix 25* for mentoring forms).

All faculty members hired after July 2015 have been offered short term mentors and were encouraged to choose long term mentors after 6 months of their starting date. Some faculty members have chosen internal mentors and others preferred to continue with their external mentors. The senior Faculty members were also encouraged and given the chance to get involved in long term mentoring and coaching. A list of mentees and their respective internal and external mentors is included in *Appendix 26*. Mentorship efforts are considered as part of the mentors' service to the College and is considered in the Annual Activity Review.

vii. Professional development

Faculty have a development fund to use on research, conference attendance or other professional development. In addition to these personal funds the College arranges internal training and development seminars on topics identified by faculty and staff in a needs analysis

conducted by the College's Orientation, Mentoring and Faculty Development Committee. In 2015 the Committee conducted a survey to identify areas of training and development that faculty were most interested in; based on these self-identified needs a plan was drafted accordingly. Faculty were specifically asked to indicate needs in the three areas of research, teaching, and service. Below are the top two needs identified in each area:

Research development needs:

- i. Teaching scholarship
- ii. Writing manuscripts and developing funds.

Teaching development needs:

- i. Preparing exams and effective assessment
- ii. TBL teaching strategies

Service development needs:

- i. Chairing committees
- ii. Involvement in national services

The Orientation, Mentoring and Faculty Development Committee implemented and evaluated a number of sessions throughout 2015 and 2016, shown below.

COP Session focus	Date	Presented by	Status
Research			
Prism software training	Nov 2015	Company representative	Presented
Industrial and SBIR Grant funding	Aug 3, 2016	Dr. Leo Fitzpatrick	Presented
School of medicine Live Webinar "publication tips for success"	Feb 2016 (multiple days)	A panel of editors of the Medical and health education journals	Presented
How to write a manuscript	Aug 3 2016 , Nov 8 th 2016, Jan 26 th 2017	Dr. Lingyun Lu for Clinical manuscripts Dr. Elkeeb, Fitzpatrick for review articles (Oct 11, 2016) Dr. Zhuqiu Jin for basic sciences	Presented
Teaching			
Seminar: Jeopardy style exam review in a March TBL class	Jan 2016	Dr. John Cusick	Presented
Seminar: Best practices in Assessment	March 2016	Karen McClendon	Presented
College of medicine Live Webinar : Instructional Design: Learning Objectives, Backwards design,	March 2016	Live Webinar	Presented

Blooms Taxonomy, 2) Planning for Curriculum Mapping 3) Assessing the Quality of Test Items			
Effective Rubric Design in Examsoft	April, 2016	Dr. Sukhvir Kaur	Presented
Latest TBL Practice half day workshop	June, 2016	Drs. Ruth Vinall, Suzanne Clark, Parto Khansari	Presented

c) Resources: Student support

The College offers students support in a number of ways. This section deals with the support systems and processes that are in place to help students whose academic performance becomes a concern. There is a clearly defined Academic Progression Policy (*Appendix 10*) in place to ensure program integrity, which is shared with the students through the College website, presentations during orientation and it is reproduced in the student handbook. The Policy stipulates what occurs when student's academic performance falls below recognized standards.

Academic support programs typically include remedial (reactive) and pre-remedial (proactive) approaches. The College has a range of programs aimed at helping struggling students that include both remedial and pre-remedial approaches. The range of established remedial measures include academic alerts, individual tutoring, and remediation following final exams.

i. Academic alerts

The academic alert process is used as an early warning sign for students experiencing academic difficulty. If a student achieves a grade of D or F on any significant assessment (e.g. mid-term exam), or if the course instructor has concerns about a student at any time during the semester, an alert is triggered resulting in one or more meetings with the student to ascertain the source of the difficulty and to devise a plan of remedial support, in the first instance with the course instructor and, in the case of multiple alerts, with the Senior Associate Dean of Academic Affairs. The meeting identifies whether the student needs additional support from the Instructor, whether a personal tutor or group tutor is required, or some other support particular to the student's needs at the time.

Students can receive academic alerts for multiple courses or the same course multiple times, depending on progress achieved; progress is monitored on an on-going basis throughout the semester and interventions become more robust if progress is not achieved. Student's engagement in the process varies, and this is considered at the end of each semester if student's progression into the next semester is under threat.

A retrospective analysis of alerts was conducted to help inform the effectiveness of the processes and assistance offered, and to inform how the College can better support students who are experiencing academic difficulty in order to prevent loss of students from the program. The review led to a number of changes, including changes to the Academic Progression Policy, monitoring and assessment of the effectiveness of the tutor support service, and introduction of a classroom supplemental instruction scheme (CSI).

The number and trends associated with academic alerts is shown in table 17. The data show that the number of academic alerts increased year on year as the number enrolled in the

program increased. The ratio of alerts to students remained relatively steady for the first 5 years (between 0.17 - 0.34), but it rose in 2014-15 to 0.58 and to 0.70 in 2015-16.

Table 17: Academic alerts by semester and academic year

Academic alerts by semester (didactic courses only)							
Semester	P1	P2	P3	Semester total	Academic Year total	# of P1-P3 students	Ratio of alerts per student
Spring 2009	15	0	0	15	15	89	0.17
Fall 2009	7	15	0	22	54	179	0.30
Spring 2010	19	13	0	32			
Fall 2010	24	8	5	37	98	279	0.35
Spring 2011	22	13	26	61			
Fall 2011	15	25	25	65	108	296	0.36
Spring 2012	0	16	27	43			
Fall 2012	36	28	22	86	107	313	0.34
Spring 2013	3	16	2	21			
Fall 2013	42	24	12	78	141	327	0.43
Spring 2014	37	16	10	63			
Fall 2014	59	32	3	94	198	341	0.58
Spring 2015	54	27	23	104			
Fall 2015	35	31	15	81	210	302	0.70
Spring 2016	36	35	58	129			

While in general P1 students generate the majority of alerts in any given year data in Table 17 show there were some exceptions: for example, in 2011-2012 and 2015-16 P3 students accounted for the largest proportion of alerts, with 47% and 35% respectively of the years' total. High turnover of faculty in 2015-2016, many of whom taught P3 classes (e.g., PHAR 853 and PHAR 856), could have impacted student learning; however, the CO2017 also has one of the lowest overall GPA and Science GPA on admission, and the most dismissals (9) of any class, so the number of academic alerts for this P3 class could also be related to the caliber of some of the students in the class.

Analysis of academic alerts in 2015-16 by course, (see Table 18), shows that certain ones: Biopharmaceutics (PHAR 632) in the first year, Pathophysiology II (PHAR 725) in the second year, and Pharmacotherapy IV (PHAR 856) in the third year, generated the most alerts. This has helped us identify where students need extra support; resources are allocated to student tutors to assist any student who needs help, but additional resources have been allocated to a CSI program, which began in Spring 2015 and which is targeted at first year students in particular.

Table 18: Academic alerts by course (NB. Not all courses are shown in the table)

ACADEMIC ALERTS	2011-12	2012-13	2013-14	2014-15	2015-16
PHAR 621: Cell and Molecular Biology & Biochemistry	3	16	18	12	10
PHAR 622: Pathophysiology & Pharmacology I	-	1	11	1	12
PHAR 631: Medicinal Chemistry & Physical Pharmacy	5	4	10	9	5
PHAR 633: Basic Pharmacokinetics	-	-	-	41	12
PHAR 632: Biopharmaceutics, Drug Delivery, & Calcs	-	-	4	10	20
PHAR 634: Biostatistics and Pharmacoepidemiology	-	-	-	2	2
PHAR 641: Self Care I	7	16	-	27	-
PHAR 642: Self Care 2	-	-	15	10	10
PHAR 661: Introduction to Pharmacy Practice	1	-	-	-	-
PHAR 724: Pathophysiology and Pharmacology II	20	7	14	21	14
PHAR 712: Communications	-	-	-	-	-
PHAR 743: Drug Literature Information & Evaluation	1	2	-	1	-
PHAR 725: Pathophysiology & Pharmacology III	2	-	16	19	20
PHAR 757: Pharmacotherapy I	5	19	10	10	17
PHAR 752: Pharmacotherapy II	16	16	-	5	15
PHAR 710: Practicum 2					
PHAR 811: Pharmacy and the Health Care System	-	13	6	-	-
PHAR 813: Pharmacy Law and Ethics	-	-		-	-
PHAR 827: Immunology	5	5	3	-	2
PHAR 815: Pharmacy Management	9	-	2	-	-
PHAR 853: Pharmacotherapy III	8	2	1	-	13
PHAR 856: Pharmacotherapy IV	6		8	24	58
TOTAL	88	101	118	192	209

Each semester faculty are presented with summary data on academic alerts and the tutoring service, as part of a review of student progression in the previous semester. By way of example, the summary for the Spring 2016 semester is shown below:

- 87 students generated 129 Academic Alerts
- 30 students had multiple alerts
- 45 (52% of the total) of the 87 students who generated alerts were P3 students
- 10 required remediation
- 1 was dismissed

Due to concerns that the increase in the number of academic alerts may be related to student's GPA on admission, a detailed analysis of academic alert data and students' admissions data was undertaken. Data on students in classes 2015 through to 2020, with and without academic alerts, have been analyzed (Tables 19 to 24 below).

In general, students with one or more academic alerts do have lower GPAs on admission compared with those without alerts; however, the difference is not always statistically significant; furthermore, where there is a significant difference it tends to be with the overall and Science GPA, rather than with the Math GPA, although the pattern is inconsistent across the six cohorts whose data have been analyzed. Furthermore, while the difference is

statistically significant (for overall and science GPA in most years) the negative correlation between admissions GPAs and alerts tends to be weak.

Tables 19a and 19b: Class of 2015 – Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (104)	3.20	3.08	3.21
One alert (1)	2.97	3.12	2.53
Multiple alerts (1)	3.44	3.38	3.92
Class average (106)	3.20	3.09	3.21
ANOVA - Significance	0.393	0.605	0.130

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.84**	1.00	
Math GPA	0.59**	0.37**	1.00
# of Alerts	0.04	0.09	0.67

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Tables 20a and 20b: Class of 2016 – Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (57)	3.27	3.14	3.28
One alert (18)	3.17	3.02	2.97
Multiple alerts (28)	3.09	3.00	2.96
Class average (103)	3.20	3.08	3.14
ANOVA - Significance	0.006*	0.120	0.015*

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.84**	1.00	
Math GPA	0.60**	0.33**	1.00
# of Alerts	-0.28**	-0.18	-0.26**

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Tables 21a and 21b: Class of 2017 – Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (48)	3.16	2.99	3.27
One alert (18)	3.07	2.86	3.10
Multiple alerts (48)	3.06	2.84	2.93
Class average (114)	3.10	2.91	3.10
ANOVA - Significance	0.120	0.013*	0.078

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.83**	1.00	
Math GPA	0.62**	0.38**	1.00
# of Alerts	-0.22*	-0.26**	-0.31**

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Tables 22a and 22b: Class of 2018 – Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (50)	3.24	3.10	3.31
One alert (19)	3.08	2.84	3.01
Multiple alerts (51)	3.10	2.89	3.07
Class average (120)	3.15	2.97	3.16
ANOVA - Significance	0.010*	0.001*	0.021*

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.89**	1.00	
Math GPA	0.66**	0.50**	1.00
# of Alerts	-0.17	-0.24**	-0.08

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Tables 23a and 23b: Class of 2019 – Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (29)	3.25	3.12	3.24
One alert (13)	3.07	2.95	3.01
Multiple alerts (25)	2.99	2.75	2.92
Class average (67)	3.11	2.95	3.07
ANOVA - Significance	0.003*	0.001*	0.146

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.83**	1.00	
Math GPA	0.66**	0.42**	1.00
# of Alerts	-0.27**	-0.37**	-0.13

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Tables 24a and 24b: Class of 2020– Academic alerts and mean GPA on admission, and correlations

Alerts (#)	Overall GPA	Science GPA	Math GPA
No alerts (84)	3.10	2.91	3.07
One alert (22)	2.87	2.65	2.83
Multiple alerts (17)	2.91	2.63	2.84
Class average (123)	3.03	2.83	3.00
ANOVA - Significance	0.006*	0.004*	0.110

	Overall GPA	Science GPA	Math GPA
Overall GPA	1.00		
Science GPA	0.94	1.00	
Math GPA	0.72**	0.61**	1.00
# of Alerts	-0.22*	-0.24**	-0.14

Pearson correlation; **significant at 0.01 (2 tailed) or * (0.05)

Although these analyses suggest that students with lower GPAs on admission are more likely to have academic alerts throughout the program, the patterns are not consistent every year and the correlation is weak, indicating that other factors play into student performance. While lowering admissions GPAs might be necessary to avoid destabilizing the program and its sustainability, this analysis of academic alerts does at least indicate that this would impact the amount of support needed by students from faculty.

As well as reviewing the academic alert data and the process itself, we have also closely monitored the progression of students and intervened earlier where possible to try to prevent dismissal because of academic problems; furthermore, in 2015-16 the College reviewed the Academic Progression Policy that had been in place since 2012-13 and made changes to ensure students were not negatively impacted, particularly in the first semester of the program.

ii. Individual tutoring support for students

The tutor service program offered to students experiencing academic difficulty continues to be one of the most successful student services at the College of Pharmacy (COP). The Associate Dean of the COP Office of Student Affairs implemented the tutoring service program in 2009 as a support service. Tutoring services are provided to individual students and small groups.

The individual and small group tutoring service is available to students who have been placed on academic alert for a course or course(s). Students on academic probation can be paired with a tutor proactively, so that help is provided to *prevent* academic difficulty, rather than waiting for an academic alert to be triggered. Students on academic alerts are notified they are eligible for the service and can elect to participate or decline the service assistance. A majority of students elect to receive the service. The individual and small group tutoring service has been provided by peer tutors nominated or recommended by course coordinators. The tutors are paid a small fee from student service funding. The number of hours a student tutor can provide this service has been capped to insure the tutor does not experience academic difficulty with their own coursework.

Table 25 below shows data for the tutoring service program for the past two years. The rate of students receiving tutoring services who successfully complete the course has been very high. Unfortunately there are a few who continued to struggle with understanding the concepts. Some of these students were put on academic probation and into a five year program. Students who failed the course outright, or failed remediation and who did not meet the standards of the COP progression policy were dismissed from the program. The COP plans to continue the individual and small group tutoring service to help support and provide assistance for student success.

Table 25: Tutoring service use and outcomes 2014-16

Semester/Year	Number of Students placed on Academic Alert	Tutoring Service Participants	End of Semester Outcome for those who received tutor support
Fall 2014	124	114	Pass – 112, Probation – 0, Dismissed – 2
Spring 2015	105	95	Pass – 92, Probation – 0, Dismissed – 3
Fall 2015	60	56	Pass – 52, Probation – 4, Dismissed – 0
Spring 2016	87	37	Pass – 36, Probation – 0, Dismissed – 1

iii. Classroom supplemental instruction support

The academic alerts scheme and the tutoring service are predominately reactive, in that they are triggered after a student earns a poor grade on an exam or project. In order to provide proactive, pre-remedial academic support, in January 2015 a program was launched based on the principles of Supplemental Instruction (SI). Although SI has been used in selected medical and dental professional programs, there are few published reports of SI being used in PharmD programs.^{6,7}

Whereas tutoring programs typically target struggling students, SI targets difficult courses. SI often is offered for science and math courses with a history of frequent Ds, Fs, or withdrawals, especially large freshman and sophomore classes. We have adapted the traditional SI approach to our Doctor of Pharmacy (PharmD) program.

The aim of our CSI program is similar to traditional SI: to provide academic support to students *well before* they begin to struggle in a challenging PharmD course. As for traditional SI programs, CSI it is open to all PharmD students and, given the high level of attendance (approaching 90% of the P1 class for some sessions), our CSI program does not appear to bear the stigma of individual tutoring. CSI sessions begin early in the semester to provide support before the first exams or major projects, with the aim of helping students do better on early iRATs and to avoid failures on exams. CSI sessions are typically 2 hours in length, offered biweekly and are scheduled around the P1 exam schedules, as well as the exams of the CSI Leaders. In addition, CSI Leaders also offer 1-2 office hours/week in a quiet, accessible office designated for CSI and tutoring.

CSI at the CNUCOP is now in its 5th semester; up to and including Fall 2016 CSI was offered for the following four courses:

2015 Spring: P1 Pharmacokinetics (PHAR 633)

2015 Spring: P2 Pathophysiology and Pharmacology III (PHAR 725)

2015 Fall: P1 Cellular and Molecular Biology and Biochemistry (PHAR 601)

2016 Spring: P1 Pharmacokinetics (PHAR 633)

The Dean approves the program and allows administrative and financial support. The Chair of the Department of Pharmaceutical and Biomedical Sciences and the Office of Academic Affairs identify high-risk courses in the P1 year for which CSI should be offered. Once academic alerts are generated and processed by the OAA, the Associate Dean and faculty advisors encourage struggling students to attend the CSI sessions for supported courses. Course coordinators are consulted about the content of the Application Exercises prepared by the CSI Leaders for their CSI Sessions and the faculty members are provided the opportunity to review and provide feedback to the CSI Leaders on the applications, as well as allow limited access to Canvas for file downloads.

The CSI faculty coordinator works with the course coordinators to identify potential CSI Leaders, helps set the CSI session schedule, reserves the rooms, track scheduling conflicts, reviews/edits/prints the applications, and tallies attendance. The CSI coordinator also works with the CSI Leaders to schedule the sessions around the P1 exams, as well as the Leader's own exams. The CSI faculty coordinator provides information on SI, learning, TBL, teaching methods, and peer-assistance programs to the CSI leaders. The CSI coordinator also provides information to the faculty about the process and aims of CSI, the level of responsibility and autonomy of the CSI leaders, and the general procedure each week.

Our CSI leaders are P2 or P3 PharmD students chosen based on a range of characteristics: they must have received an A in the class in a previous year, they preferably were individual tutors (paid or volunteer), and they are viewed by faculty members as overall conscientious, responsible and academically oriented students. Leaders also have organizational and ethical traits important for this role, including time management skills, a commitment to honesty and accuracy, respect of (and respected by) fellow students, and a strong sense of responsibility. SI

Leaders must have a high GPA (i.e., are Rho Chi members or will be eligible at the end of their P2 year) and are identified by the course coordinator as among the top students in their class. As our CSI Leaders also work in pairs, Leaders also must have effective teamwork skills and be comfortable sharing leadership, workload, and authorship.

For each course, the CSI student leaders hold weekly or bi-weekly 2-3 hour review sessions open to all students during which they reviewed problem sets or specific concepts in a large group setting, using TBL and active-learning methods. To prepare, the CSI leaders reviewed the material covered in the week(s) before and then develop problem sets and application exercises for the session. Applications were reviewed by the course coordinator and/or the CSI faculty coordinator. Attendance is encouraged, but was optional, to allow the student autonomy in their choice of study approaches. As is the case for typical SI programs, attendance is taken, but is not provided to the course coordinator, to maintain confidentiality of those who attended – a factor to which the course coordinator agreed as part of having CSI support for their course.

P1 Courses: For all of the P1 classes, the CSI sessions were well-attended and well-received. For example, for the Fall 2015 Cell and Molecular Biology and Biochemistry course, 9, ~ 2-hour CSI sessions were held with a cumulative attendance of 253 unique visits for the 2 hour sessions, for a total of 506 student-hours served. An average of 44% (range 19-70%) of the class attended the sessions (which is roughly double the reported national average for SI sessions). For the spring 2016 Pharmacokinetics class, 10 CSI sessions were held with approximately 150 unique visits for the 1-3 hour sessions. Each CSI Leader reported working 55 (Fall 2015 Leaders) and 60 (Spring 2016 Leaders) hours total, which included preparing for and holding sessions, as well as holding ~ 1-2 office hours/week. CSI Leaders are paid a flat rate of \$1,200/semester.

Informal feedback has been positive from the students in the P1 classes and they asked for the program to be continued and for more classes to have CSI in the future. In addition, the CSI Leaders reported feeling that the program provided them with a good introduction to teaching in an active learning and TBL format, viewed the experience as positive, though rigorous. It also can promote their academic leadership skills and CSI Leaders have been awarded College-wide awards and scholarships, with their work in CSI being mentioned in award and scholarship nomination packages and in letters or references for competitive internship positions.

The COP will continue to monitor the use of the tutoring services and their success. The service expansion will require administrative approval and budget funding allocation from the institution which has provided support for the program since 2009.

iv. Orientation program

Since CNUCOP's inception, all incoming first-year pharmacy students are required to attend a four-day orientation, which is held in mid-August, one week before classes begin. The topics reviewed during orientation have remained consistent over the years, with the exception of the

addition of a Scavenger Hunt, which was added in 2013 to facilitate team building. Topics reviewed during orientation include, but are not limited to, student services, ethics/law and professionalism, experiential education requirements and internship licensing, non-academic and academic policies, student life, research, campus safety reporting, and the mentoring and academic success program. Team development activities and an introduction to team-based learning are also provided during orientation. During this time, our IT staff also delivers training on using our learning management system, CANVAS, as well as Turning Point and ExamSoft. Additionally, students are required to complete an online sexual harassment training module, provided by 'mystudentbody', prior to the end of orientation.

v. Career advising

California Northstate University College of Pharmacy offers a number of services to our students to help them advance in their pharmacy careers. Each fall the Office of Student Affairs hosts *Graduate Interview Day* for our P4 students, during which time retail and hospital pharmacy representatives, as well as representatives from the US Armed Forces, come together to interview our students in one location. Through this event, students are able to interview with up to a dozen companies in one day. *Graduate Interview Day* helps our students obtain pharmacists positions, both within and outside of California, prior to graduation. Residency mock interviews with faculty are also conducted at *Graduate Interview Day* to prepare our P4 students for residency interviews.

Similarly, in the spring of each year, the Office of Student Affairs organizes the *Pharmacy Internship Fair* for our current P1, P2, and P3 pharmacy students. This event serves as a networking opportunity for our students and enables them to speak with company representatives from across California about pharmacy internships.

Throughout the school year, the Office of Student Affairs sends frequent notifications to students about any recent employment opportunities. These internship and job listings are also posted to the Career Services section of the College of Pharmacy webpage. This section of the webpage also provides a listing of career options within the field of pharmacy, as well as web-links to a number healthcare-related employment search engines. Links to professional pharmacy organizations among other career-related information is available on the webpage.

The Office of Student Affairs has recently begun to offer workshops and seminars to our student body to help them prepare for a profession in pharmacy. This semester the Office will host a resume writing and interview skills workshop, which will help our students prepare for the upcoming *Pharmacy Internship Fair*. The Office also plans to offer a workshop on test-taking anxiety this semester. Subsequent workshop topics will be based on student interest and faculty input.

vi. Support for research or engagement

The College offers PharmD students research opportunities through a number of avenues, including through independent electives, through a new research fellowship, and where possible through funded grants. Students are also encouraged and supported where possible to explore options available externally through industry and other local research collaborations.

The Summer Research Fellowship Scheme was launched on April 14, 2016 after which two inaugural summer research fellowships were awarded to current CNUCOP pharmacy students, working on projects with two faculty, one from each of the two academic departments. A stipend of \$4800 was provided to each of the award winners by the COP.

The selection of summer fellowship awardees was made by members of the COP Research Committee. The winners were chosen based on the student's academic record, personal statement in the fellowship application, letter of recommendation, as well as overall motivation and interest in research/scholarship related to their future career paths.

vii. Financial support in the community beyond the campus

California Northstate University College of Pharmacy offers a number of scholarships and awards to qualifying pharmacy students, some of which are based on financial need, community outreach involvement and professionalism or leadership skills. Please refer to section 2c (vii) for details of the award selection process, and a list of scholarship awards made in 2015-16. The table below lists awards made by the Northern California Education Foundation, which provides tuition assistance, and academic excellence awards for community work and professionalism. <http://northerncaliforniaeducationfoundation.com/scholarships>

NCEF Scholarships 2015-2016

Scholarship/Award	Recipient Name (Class)	Amount	Donor/Contact
Tuition Assistance	Ha Boi (2017)	\$3000	CVS Health Foundation
Tuition Assistance	Vy Dang (2018)	\$3000	Jim & Claudia Bunse
Tuition Assistance	Sukhpreet Kaur (2017)	\$3000	Frank & Nancy Cable
Tuition Assistance	Takevik Kirakkosyan (2017)	\$3000	Dave & Lori Carroll
Tuition Assistance	Rebecca Lemus (2017)	\$3000	Alvin & Susan Cheung
Tuition Assistance	Jacqueline Luu (2017)	\$3000	Alvin & Susan Cheung

Tuition Assistance	Lia Martirosyan (2017)	\$3000	David & Sally Cheung
Tuition Assistance	Justin Nguyen (2017)	\$3000	CNCP LLC
Tuition Assistance	Stefanie Stafford (2017)	\$3000	CNCP LLC
Tuition Assistance	Myung Choi (2018)	\$2000	Safeway Inc
Tuition Assistance	Daniel DeRobles (2019)	\$2000	Fong Family
Tuition Assistance	Matthew Lenihan (2017)	\$2000	Yuji Jin
Tuition Assistance	Vinna Nam (2019)	\$2000	King & Gloria Gee
Tuition Assistance	Omi Patel (2017)	\$2000	David Haddad
Tuition Assistance	Chettra Prum (2017)	\$2000	David Haddad
Tuition Assistance	Mojgan Siman (2018)	\$2000	Yuji Jin
Tuition Assistance	Harish Singh(2017)	\$2000	Stan & Mimi Lee
Tuition Assistance	Vi Thai (2018)	\$2000	CVS Health Foundation
Academic Excellence/Achievement	Diem Chi Ngoc Tran (2017)	\$1500	Robert Malvesti
Academic Excellence/Achievement	Laura Smith (2017)	\$1500	Paulina Tam
Academic Excellence/Achievement	Andrey Fedorov (2017)	\$1500	Paulina Tam
Academic Excellence/Achievement	Ngo Tra (2017)	\$1500	Calvin & Gail
Academic Excellence/Achievement	Gui Wei Katherine Deng (2017)	\$1500	Gordon & Merrily Wong Family
Academic Excellence/Achievement	Justin Nguyen (2017)	\$1500	Gordon & Merrily Wong Family
Academic Excellence/Achievement	Nelson Chu (2018)	\$1500	Gordon & Merrily Wong Family
Academic Excellence/Achievement	Han Dang (2018)	\$1500	David Haddad
Vice Presidents' Scholarship	Alice Kwok	\$750.00	CNUCOP Admin Staff

viii. Student organizations and fraternities

The College from its inception has supported several student organizations that help aid in developing attitudes and values that are important when practicing pharmacy. One of the first to be established was 'PRIDE' (Professionalism, Responsibility, and Involvement in my Dedication to Excellence), developed to expand on professionalism and provide students with skills necessary to be a contributing member of the profession.

Currently, California Northstate University College of Pharmacy has 17 student organizations or bodies and fraternities (see list below). These organizations and fraternities are very active in the community through their participation in both healthcare and non-healthcare related activities. Health fairs are organized throughout the school year, where services such as influenza immunizations, health screenings (blood pressure, diabetes, cholesterol) and disease state education are provided to the community.

Student Organizations at COP
Academy of Managed Care Pharmacy (AMCP) – International Society for Pharmacoeconomics and Outcomes Research (ISPOR)
American Pharmacists Association (APhA)/ California Pharmacists Association (CPhA)
American Society of Consultant Pharmacists (ASCP)
American Society of Health System Pharmacists- Student Chapter (SSHP)
Christian Pharmacists Fellowship International (CPFI)
CNU Cancer Awareness Research & Education Society (CNUCARES)
Diverse Women in Professional Healthcare (DWP)
Industry Pharmacists Organization (IPhO)
Kappa Psi (KY)
Multicultural Association of Health Profession Students (MAPS)
National Community Pharmacists Association (NCPA)
Phi Delta Chi (PDC)
Rho Chi Society
Rho Pi Phi (RPP)
Student Body Council (SBC)
Student College of Clinical Pharmacy (SCCP)
Student National Pharmaceutical Association (SNPhA)

Our students also engage in events focused on increasing awareness of and/or funding for certain disease states through their participation in community walks and other fundraisers. Examples of non-healthcare related activities our students have partaken in include collaborating with *Habitat for Humanity* to help build houses, collecting toys to give underprivileged children in *Operation Christmas Child*, and developing water pasteurization indicators for third world countries.

Our students' involvement extends beyond the community to regional, state, and national levels. Through their participation in numerous local competitions evaluating their clinical

knowledge, or from their involvement in research at the college-level with faculty, our students travel to compete and/or present research posters at state, regional, and/or national meetings. The Office of Student Affairs provides financial assistance to those students involved in competitions and research presentations to enable them to travel to these meetings and represent CNUCOP.

The Office of Student Affairs records all co-curricular learning events in an event log to evaluate student completion of co-curricular learning activities. Information recorded in this log includes the name of the student(s) participating in the event, along with a description of the event, and activities undertaken. Further development of co-curricular activities and helping students reflect on these sorts of experiences will help reinforce students' understanding of principles learned in the classroom, and will become one of the top priorities for the Office of Student Affairs in the coming months.

The Office of Student Affairs works closely with the Student Organization Leadership Council (SOLC), the composition of which includes the president from each organization and fraternity. SOLC meetings with the Assistant Dean of Student Affairs are held bimonthly to discuss items related to co-curricular activities, organization funding, inventory for health fairs, and any other topics as needed.

To ensure students do not burden themselves with too many extra-curricular commitments and to help safeguard poor academic performance, a student running for an officer position must meet the following requirements: i) have a cumulative GPA of at least a 3.0, ii) be in good financial standing with the College/University, iii) not be on academic probation and iv) not have any significant professionalism issues during the pharmacy program.

Students interested in serving in two officer positions must have a minimum cumulative GPA of at least 3.25 to ensure they have a strong academic foundation prior to committing themselves to two leadership positions. Students are not permitted to serve as an officer in more than two organizations. The academic standing of each officer will be tracked and those experiencing academic difficulties in one or more courses, as evidenced by an officer being placed on academic alert, may have certain restrictions imposed on them by the Office of Student Affairs to limit their participation in extracurricular activities until improvement in grades are noted. Two or more academic alerts may result in the officer being removed from his or her position.

Students interested in running for officer positions must first notify the president of the organization of interest that they plan to run for a specific officer position. A list of all students interested in running for officer positions is then compiled and submitted to the OAA in order to verify academic standing and professionalism. Students who do not meet the requirements are removed from the list. The specific reason(s) for removal of students from the lists is not shared with the organization's president.

ix. Other support for students

Any student enrolled at California Northstate University who is experiencing emotional difficulties has the option of meeting with our onsite psychologist. Additionally, students are encouraged to use Talk-One-2-One, an around-the-clock phone service that provides students the opportunity to speak with a counselor trained in managing a variety of conditions including but not limited to stress and anxiety, depression, substance abuse, financial problems, etc.

d) Information and Technology Resources

A new email server for University was introduced in 2014 and involved migration from 2003 to Exchange 2010 to allow some key features for both faculty/staff and students, including a much more responsive Outlook Web Access browser client, smartphone email syncing for students, Outlook Anywhere, and improved data loss prevention.

Significant hardware infrastructure improvements were also made in 2014 when the university moved to the Elk Grove site. All networking equipment including firewalls, routers and switches has been designed, replaced and put into production with newer equipment. This new hardware and design has been built in for greater redundancy with dual firewalls, core routers and cabling redundancy for the switches. CNU installed a new SAN (storage area network) for file services. This includes high-capacity redundant drives, SAN switches and multiple power sources for increased up time for files and increased storage management compared to the simple file server prior to the move to Elk Grove.

Wireless infrastructure for students, faculty and staff, in regard to new equipment and new network designs, was also improved. Wireless infrastructure now runs at 10 times the speed (100 Mb/s to 1 Gb/s) compared to the Rancho Cordova facility. This allows for 10 times as many users to connect to a single access point. Even with the greater throughput, CNUCOP has increased the amount of wireless access points in most areas to meet the increased demands of wireless usage. Unlike in previous wireless models in most universities with a 1:1 ratio of students devices/student CNU has accounted for the increased usage of BYOD (bring your own devices) to go beyond only laptops, so that the ratio was calculated closer to a 3:1 figure in our design. This will mitigate saturation rates on the wireless access points.

With the increased requirements for bandwidth due to new equipment and network design, CNU has partnered with Consolidated Communications to provide 200 Mb/s of bandwidth as well as partnering with Frontier Communications to provide another 100 Mb/s of bandwidth. The total of 300 Mb/s of bandwidth compared to the 50 MB/s of bandwidth at the former Ranch Cordova location provides a 6-fold increase bandwidth capacity. Another major key implementation was the partnership of bandwidth from two separate providers. This allows for increased redundancy in case one of the lines or the communication companies were to have an outage. This redundancy will allow for seamless continuity of academic and university support functions with the implemented failover and greatly increases instructional use of the

Internet (e.g., youtube.com videos) and other programs/devices taking up large memory storage capacity.

Audio/Video capacity in the classrooms have been significantly upgraded. New screens with widescreen formatting, projectors, wiring, audio equipment and design have all been purchased and implemented in the new facility. Ten high-end Shure wireless microphones throughout each classroom have been added. The microphones include push-to-talk function so that unwanted conversations are not transmitted and to reduce faculty need to turn off unwanted microphones centrally during class. Display Note is a newly purchased application provided to students as another option of viewing content. Display Note allows students to view presentations displayed on classroom screens directly on their laptop. This provides a way for students to save annotations made on presentations directly to their laptop.

ExamSoft was first introduced in 2014 during which time it was in limited use among certain faculty for pilot testing. In 2015 faculty were required to use ExamSoft for all summative assessments, and by 2016 it was being used by all faculty for all assessments. The software ameliorates administrative burden and enhances security in testing environments. The LMS software – CANVAS – was also introduced in 2015, with all students having access to guided reading, syllabi, and grade books for all courses for which they are registered.

The 'My Mediasite' application has been purchased/installed to allow faculty to generate video content such as voice-over Power Point presentations directly from the faculty member's desktop or laptop. It allows them to generate, upload, manage (store, group and search), edit video content and view student usage metrics regarding the presentation created.

The University has recently undergone and adopted policy changes to strengthen the institution's informatics and data security and safety systems, largely to help prevent external threat or risk of mal-ware hacking and intrusion.

Finally, students can access library resources on-site and on-line. The Director of Library and Learning Resources is Mr. Scott A. Minor, who has held the position of Library Director at Californian Northstate University fulltime since April 2008. He works fulltime and is available to help students and faculty access books and PCs in the library itself; students have immediate online access to over 500 of the top rated pharmacy and medical journals. In addition the Library has access to an addition 1000+ professional journals via a pay-per-view arrangement from OVID Technologies Inc. These articles may be purchased by the Library Director on an as-needed basis. The College is a member of the National Networks of Libraries of Medicine and participates in the DOCLINE interlibrary loan system which allows it to request copies of articles from any of the other member libraries. These requests are usually filled in approximately 2 working days.

e) Physical Resources

The College moved to its new facility in Elk Grove, CA, in May 2014. The facility features larger classrooms with upgrades in technology and bandwidth, an enhanced Library and Learning Center, more office space, more study rooms, more research space, and enhancements to simulation, IV and mock pharmacy labs.

There is 4,200 square feet of shared Library space, which has recently been reconfigured to create more study space for the students (increased seating by 33%). The new LLC study area allows for seating of 140 students. The study area includes five large partitioned areas which, although not entirely enclosed, allow for groups of up to 6 or 7 to work together and five open tables which will allow up to 6 to work together. The Library also provides ten smaller areas which would allow for 2-4 students to interact in relative isolation. There are two group study rooms. The smaller can accommodate approximately 8 students and the larger can seat from 12-40 depending on the configuration of tables and chairs. There are 16 carrels for individual studies and 10 public computers for patron use.

There are 3 large classrooms of 5000 square feet each for dedicated College use; they are fully networked to allow professors and students to use the latest instructional technologies as part of the learning process. The classrooms have 6 projectors and screens for presentation by the instructor, and each classroom has 10 student microphones. There are two smaller classrooms with AV projection of 670 square feet that can be used for elective instruction, student breakout sessions, or meetings for up to 25 students. The College has 3 conference rooms and small classrooms can be coordinated and shared with the COM when additional space for elective classes or meetings might be required.

The College has approximately 2,100 square feet of dedicated research space, equipped to perform for cell culture, biochemical assays, western blot analyses, immunohistochemistry and High Performance Liquid Chromatography (HPLC). This space is allocated for benchtop research applications for faculty teaching inside the COP and their student mentorships. The College also recently acquired access to an animal research facility under contract with Antibodies Inc. (a commercial animal research facility) and in addition, has an external agreement with UC Davis Cancer Center (Sacramento, CA) to perform oncology-related animal research.

The COP possesses a model pharmacy lab comprised of 857 sq. ft. for training students in mock drug consultations, vaccination programs, and community healthcare outreach efforts. It is set-up in an open air/multipurpose format and can be accessed for a variety of training opportunities. The COP also has 675 sq. ft. of dedicated space for a sterile compounding laboratory. This space is used to train students in the art of preparing sterile medicines for intravenous applications, and is split into two distinct areas. The antechamber is set up to observe students donning their gowns and how they scrub down prior to entering the

preparation area. The main chamber is composed of simulated hoods and is the focal point of activity for the preparation of pseudo-medications. Construction of the lab was completed in early 2016 and classes began utilizing the space in the Spring Semester of 2016 for the following courses: Introduction to Pharmacy Practice, Pharmacotherapy II, and Pharmacotherapy III.

In addition to dedicated facilities the College also has access to a 2,500 sq. ft. clinic facility for Objective Structured Clinical Examination (OSCE) training, located in the College of Medicine. In this observed environment, the COP students develop and practice patient interaction skills, drug history taking, patient teaching case studies, and as well as IPE training with the medical students. The center is comprised of ten examination rooms averaging 118 sq. ft. per room, a command observation room of approximately 193 sq. ft., and a mock triage room of approximately 217 sq. ft.

Other shared space includes the 619 sq. ft. Simulation lab (housed in the COM) composed of two high-fidelity mannequins, PC read outs and emergency response equipment (crash carts, blood pressure cuffs, pseudo-meds, etc.) This space is allocated for simulating an emergency room, rounding experiences, and trauma cases. The mannequins are highly interactive and give the students the opportunity to practice their communication, teamwork, professionalism, and ethical recommendations, with other health profession students.

The planned expansion of the university includes an increase in physical space. In 2014, CNU acquired use of an additional building, located at 9650 West Taron Drive. This building provides an additional 15,000 square feet and was acquired for the purpose of increasing space for students to study, relax, enjoy recreational activities, and to provide a venue (with a movable stage) for hosting major events. Furthermore, the new building allows for the addition of seven private student study rooms (for five students per room), four semi-private study rooms (for five to six students per room), and eight individual study carrels. There is a large open study lounge that can accommodate up to 400 students. There are also changing rooms, a workout center, a recreation center, a preparation kitchen, an audio-visual control room, and a room for nursing mothers.

f) Staff

COP assesses the need for staff based on program expansion and workload. The College enjoys some shared resource provided by the University rather than the College, such as centralized functions in IT, Registration, HR, and Facilities services. The current staff dedicated to College functions is identified below:

College of Pharmacy full-time administrative support staff

NAME	POSITION
Gail Kubat	Admissions Advisor
Jason McDowell	Outreach and Admissions Advisor
Imani Grant	Student Affairs Coordinator
Jonathan Ballard	Student Affairs and Admissions Coordinator
Adela Brochin	Coordinator of Experiential Education
Mallory M. Smith	Coordinator of Experiential Education
[Vacant position]	Coordinator of Experiential Education
[Vacant position]	Coordinator of Experiential Education
Scott Minor (shared with COM)	MLS Director
Melania Sukiasyan (shared with COM)	Library Assistant
Julie Prasad	Executive Assistant to the Dean
Josephine Saca	Administrative Assistant for Office of Academic Affairs
Anna Forrest	Administrative Assistant for Clinical and Administrative Sciences
Catherine Hicks	Administrative Assistant for Pharmaceutical and Biomedical Sciences
Simon Tam	IT Support Specialist
George Talbot	Research Fellow

g) Financial Resources

CNUCOP has the financial resources needed to accomplish the mission and goals of the College. The 2016 California Northstate University Audit report will be available on site.

4. **Summary reflections**

- In 2016, ACPE issued new sets of guidance and standards (Standard 2016) for the continuous quality improvement of Doctor of Pharmacy (PharmD) academic programs. Various standing committees at the college met to strategize a plan to ensure these new standards are met. New positions and initiatives were created, including the Director for the Center of Excellence in Teaching and Learning and the Director of IPE. The curriculum was revised to improve the students' clinical skills, to incorporate interprofessional education in each didactic semester and to implement PCOA, a tool to assess the effectiveness of the curriculum. As these initiatives are newly executed, review of them is ongoing to ensure compliance and quality improvement. It is the priority of the Dean's Executive Committee to maintain the annual cycle of program review which includes contributions from diverse internal and external constituents and interim reports from relevant committees, including the Assessment Committee.
- Faculty recruitment and retention are recognized as being of utmost importance to the sustainability of the College. The College has identified a number of positions where recruitment is urgent and is pursuing an aggressive recruitment campaign to ensure as far as possible that qualified faculty join the organization.
- Faculty workload is perceived as high, partly because of the above issue. Further monitoring and rebalancing of workload will be required as more faculty are on-boarded and begin to contribute to the breadth and depth of academic activity in the College.
- We believe we have student attrition under control but aim to monitor student performance in light of removing the requirement for a bachelor's degree. Further data analysis to examine the correlation between science and math admission GPAs and student performance in certain courses and in the program overall, and on milestone, capstone, and external assessments will be conducted to inform enrollment and retention plans.
- Data collection and analyses of performance data has been inconsistent over the time frame of the review, and there has been some loss of data and information due to faculty turnover. The College has spent some considerable time and effort in the

last year to remedy this. Further evaluation of milestone performance data to identify whether any curricular improvements are needed will be undertaken and the College will evaluate published literature and best practice to develop a College Milestone strategy which will address the composition of the examination, (i.e., whether to include performance-based assessment), whether to have remediation, what it would entail, and what stakes and incentives will be utilized.

- While the College is proud to support the student organizations there is some concern that there may be too many student organizations, raising questions about their sustainability vis a vis the costs associated with running them, and the time and efforts expended by students when their involvement begins to affect academic performance. The OSA has already begun to collect and examine data and look into processes associated with applying for and joining the organizations, which will help the College more closely monitor their efficiency and student involvement.
- Addressing student concerns in a timely manner are important. The Student Body Council (SBC) serves as a liaison between students and faculty/administration. Student concerns are conveyed to SBC members, who meet bimonthly with the Assistant Dean of Student Affairs. The Assistant Dean of Student Affairs communicates student concerns to the Dean to enable an action plan to be established. When appropriate, student concerns may be brought to the level of DEC for further discussion. The action plan is then relayed back to the students. The Assistant Dean of Student Affairs logs all student concerns in a database. Additionally, each semester, Town Hall meetings are held by the Dean of the College of Pharmacy to discuss any current issues and provide updates to the students on new faculty or staff, new policies or procedures, etc.
- In order to ensure the College is fully compliant with ACPE 2016 Standards the College needs to ensure we have a robust co-curricular strategy that is implemented immediately. While students have been completing co-curricular learning activities throughout the duration of the pharmacy program, better tracking and evaluating of these activities is needed to ensure proficiency in each of the six co-curricular learning outcomes has been obtained. Faculty advisors will play a key role in tracking and evaluating advisee engagement in the co-curriculum. Certain signature events that may meet a number of co-curricular learning outcomes will be highlighted by the Office of Student Affairs to ensure all students are participating in valuable experiences to complement the pharmacy curriculum.

5. Future goals and planning for improvement

Goal 1. Implement strategies that help improve faculty and staff recruitment and retention, to include strategies already identified at the University level:

- Recruit faculty to fill the 8 faculty positions that are currently vacant (6 in CAS, 2 in PBS)
- Fill the CAS Department Chair position as soon as possible
- Adjust workload on teaching and service
- Address imbalance of assistant and associate ranking between the departments
- Implement a training program for new department chairs
- Create policies to ensure regular analysis of compensation packages
- Implement a competitive pay scale
- Implement a more competitive benefits package with options for long-term care
- Implement a new 401K plan
- Implement and monitor a long-term mentoring program
- Increase the use of multi-year contracts and timeliness of contract renewals
- Introduce performance metrics for all levels of university management that include retention as a goal
- Maintain or increase the number of faculty development opportunities

Goal 2: Monitor and evaluate results from Milestone Assessments, the Pharmacy Curriculum Outcomes Assessment, NAPLEX preparations, and the Board exams, and develop strategies for their administration:

- Consider making Milestone 1 and Milestone 2 a “High-Stakes” assessment by possible incorporation into the Practicum Courses
- Consider having the 50 practice PCOA questions a required activity in the PRC 810 course in preparation for the PCOA
- Consider making the PCOA a “High-Stakes” assessment and plan for remediation
- Map the content areas of the PCOA to the COP’s curriculum
- Utilize information about students’ performance in the content areas of the PCOA to help the COP identify gaps within the curriculum
- Evaluate performance on PCOA, PassNaplexNow, and NAPLEX and their correlations and utilize the data to identify and improve curriculum gaps and consider strategies to help students’ improve performance

Goal 3: Implement a method to track and measure co-curricular learning outcomes:

- Update menu of co-curricular activities
- Map the co-curricular menu to co-curricular learning outcomes, which will enable the Office of Student Affairs, as well as each individual student, to track their progress in establishing proficiency in each of the six co-curricular learning outcomes
- The Office of Student Affairs will further refine their process for tracking and evaluating student progress in completing co-curricular learning activities
- Students will be asked to provide more detailed narratives describing their experiences in relation to the co-curricular learning outcomes
- For better tracking, students will upload these narratives to CANVAS, and faculty advisors will be tasked with reviewing the narratives and verifying that the student is participating in some level of co-curricular learning activities each academic year.

Goal 4: Maximize relationships between experiential education department and preceptors:

- Increase awareness of and participation in the PAC (preceptor advisory council) by inviting key preceptors into the process and publishing the minutes of the quarterly meetings
- Develop an edited list of preceptors to send the AACP survey to and use other means besides one large group email. Follow up as needed with reminders
- Continue and expand preceptor training options and personal site trainings
- Expand site visits and outreach
- Expand the EE section of the CNUCOP website

Goal 5: Review student organizations to ensure academics remain the primary focus for the student body:

- Consider reducing the number of organizations students can serve as officers in order to reduce the amount of time they spend engaging in extra-curricular activities and refocus attention to students' academic performance
- New officer regulations with more stringent criteria have recently been implemented to ensure students elected for officer positions have a strong academic background
- A reduction in the number of students eligible to serve officer positions may occur as a result of these updated regulations. Thus, the current student organizations and fraternities will be reviewed by the Office of Student Affairs to identify any with low membership or those with similar interests or areas of focus, which could be potentially merged
- The academic standing of each officer will be tracked to identify those experiencing academic difficulties, which may permit earlier interventions to occur

Goal 6: Review the enrollment management plan which addresses recruitment, admission, and enrollment of qualified applicants from diverse educational, demographic, and socioeconomic backgrounds.

- Initiatives that are focused on increasing recruitment efforts in the mid-West and South to better diversify the applicant pool
- More aggressive recruitment strategies to increase interest in the profession of pharmacy and ultimately the applicant pool
- A more stream-lined admissions process with faster pre-interview rubric screens and post-interview rubric reviews
- A review of the general education requirements and comparison to other programs to explore the option of reducing the number of general education classes to enable potential students to apply to CNUCOP earlier
- Better retention efforts to continue to maintain student interest after the interview, which may include more frequent meet-n-greets, making the CANVAS Incoming Student page available to incoming students earlier, providing merit-based scholarships to incoming students, using social media to maintain a connection with the students and advertise activities at the College of Pharmacy

Goal 7: Prepare for a comprehensive on-site evaluation from ACPE during the academic year 2018-19

- Prepare interim reports about the 6 standards the College is being monitored on to meet the March 2017 and October 2017 deadlines
- Plan and implement the self-study process to ensure compliance with all ACPE 2016 Standards

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