IUPUI
SCHOOL OF INFORMATICS AND COMPUTING
Department of BioHealth Informatics

Strategic Plan 2019 - 2024

Approved by the BHI faculty on November 4, 2019
The Vision and Mission
Department of BioHealth Informatics

➢ Vision:
   To become the catalyst for excellence in education, research, community engagement, and workforce development in biomedical informatics and health information management to develop the next generation of intelligent systems in healthcare.

➢ Mission:
   The SOIC BioHealth informatics Department is committed to high-quality education, student success, research excellence, and community partnerships that create superior professionals in the disciplines of biomedical sciences and technologies in healthcare.
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Strategic Area 1: Research, Innovation and Entrepreneurship

1.1. Increase external grant funding to support faculty and graduate students. (every tenure-track faculty)

Goal: Each tenured faculty at any time should hold at least one competitive extramural grant from a federal agency or equivalent as PI/Co-PI and each tenure-track faculty should be awarded at least one competitive extramural grant as PI/Co-PI within their first five years.

Action items:
- Tenure-track faculty will lead grant submissions as sole or lead PI*
- Tenured faculty will lead grant submissions as sole or lead PI and will include other school faculty on the investigatory team
- The school will hire senior faculty to support the junior faculty mentoring system
- The school will hire teaching faculty to relieve junior research faculty as they prepare competitive grant applications
- Tenure-track faculty will compete for increasingly larger and more competitive extramural funding
- Tenure-track faculty will serve as co-Investigators on project teams to gain grant-funded research experience

Timeline:
1-Year
- 75% of all faculty funded on 1 or more grants as co-I
- The school will introduce and support a research and grant development mentoring system for junior faculty

3-Year
- 75% of all faculty funded on 1 or more grants as PI/co-PI*
- 100% of all faculty funded on at least 1 grant as PI/co-PI/co-I

5-Year
- 100% of all faculty submit for extramural funding as PI/co-PI on a yearly or more frequent basis

1.2. Develop research centers of excellence

Goal: Grow the BioHeath Informatics Research Center and develop a collaborative relationship with two existing centers, institutes or universities to integrate the expertise and research priorities within the department.

Action items:
- Hire 2-3 faculty with research programs synergistic to existing faculty and school research priorities
• Support hiring within and outside of the school of cross-disciplinary faculty to contribute to centers of excellence
• BHIRC will establish recognized national or international expertise in at least 2 high-priority funding areas

Timeline:
1-Year
• Increase funding of BHIRC to 33% of operational expenses
• Develop collaboration with one research center of excellence

3-Year
• Become self-funding through external funding sources
• Develop collaborations with two research centers of excellence

5-Year
• Demonstrate additional growth in research programs to permit the addition of new faculty

1.3. *Encourage high quality publications and visibility of faculty research scholarship. (all faculty)*

**Goal:** Every research faculty should publish at least two high quality publications per year in their area of expertise as a senior author. Faculty should strive to present their scholarly work in reputed venues.

**Action items:**
• All research-intensive faculty should publish at least two high quality research articles in their field of expertise in either journals or conference proceedings as the senior/corresponding author. High quality journals are as defined by the Thomson Reuters Web of Science journal ranking by field or similar conference/journal ranking system approved by the department
• Research-intensive faculty should strive to increase the impact and the number of their journal/conference publications as they progress through their tenure
• Faculty should increase the involvement of their graduate students – masters and PhD students- as co-authors in their publications
• Tenured faculty should aim to publish at least one article per year which is highlighted by their peers as a landmark study and can be highlighted on the departmental website

**Timeline:**
1-Year
• 20% of the faculty should be invited to present their research results at least once per year in a peer institution or at a reputed international conference in their field of expertise
3-Year
- 50% of the faculty should be invited to present their research results at least once per year in a peer institution or at a reputed international conference in their field of expertise

5-Year
- 80% of the faculty should be invited to present their research results at least once per year in a peer institution or at a reputed international conference in their field of expertise

1.4. Pursue research commercialization and entrepreneurship. (Gary: updates and future items)

Goal: To accelerate Innovation and Discovery through Research, it is imperative to engage in and promote research commercialization and to develop entrepreneurial skills among faculty and students to broaden societal impact of the translational research. The Department of BioHealth Informatics is uniquely positioned to foster this objective because the broad field of biomedical informatics values invention as an integral part of the research and discovery process. Many major inventions with commercial impacts in our field have been started by graduate students in university labs working with their faculty.

Action items:
- Promote, recognize, and encourage commercialization and technology transfer of faculty and student projects
- Establish training in entrepreneurship and support mechanisms for research projects that lead to research commercialization
- Expand the number of students at undergraduate and graduate levels engaged with industry for R&D
- Offer training by IURTC on the value and process of patent applications, disclosures, and commercialization/technology transfer strategies
- Recognize patents and commercialization as an important sign of effective scholarship (innovation and impact) and effort in annual reviews and P&T
- Explore more opportunities for research commercialization and entrepreneurship.
- Promote participation to the ITEC projects on campus to mentor students in building spin-offs from student-faculty projects
- Explore connections through departmental visits with some of the local organizations/incubators supporting entrepreneurship
- Organize presentation to the Department by IURTC on commercialization and technology transfer
- Organize invitation of community industry experts in commercialization and entrepreneurship

Timeline:
1-Year
- Create policy guidelines to support research to R&D commercialization for faculty and students
- Develop departmental webpage to discuss opportunities and strategies for commercialization and entrepreneurship
- Initiate at least one faculty application for commercialization of IP

3-Year
- At least 20% of faculty have initiated the application for commercialization of IP for identified informatics opportunities that are commercially viable
- At least 2 faculty have submitted STTR (Small Technology Transfer Research) or SBIR (Small Business Innovation Research) proposals with IUPUI and a corporate partner
- At least one faculty, student or alumni is featured for commercialization accomplishment at departmental websites, newsletters, and brochure

5-Year
- At least two faculty, student or alumni are featured for commercialization accomplishment at departmental websites, newsletters, and brochures
- At least 4 research faculty have identified opportunities that are commercially viable
- At least 4 faculty have submitted STTR or SBIR proposals with IUPUI and a corporate partner

1.5. Establish productive internal and external collaborations (Gary and others)

**Goal:** The ever-increasing complexity of biomedical problems requires intense collaboration across traditionally separated disciplines to achieve research success. To transform our research program and exert influence on the course of research throughout the university, it necessitates more communication and more collaboration within the Department of BioHealth Informatics and beyond.

**Action items:**
- Utilize the BHIRC to develop relationships with other universities, including those in traditionally underserved or underdeveloped areas, to collaborate on research initiatives to advance the biomedical informatics discipline
- Devise new ways to foster constructive dialogue on important intellectual issues among faculty and students within the department.
- Improve policies and practices affecting collaboration to include multiple disciplines and/or external institutions
- Identify areas of common and complementary interest between our department and those in medical school, and nurture these by encouraging joint seminars.
- Create a supportive environment for faculty to advertise and share their software tools.
- Ensure that annual review and P&T procedures allow and encourage collaborative and team efforts, including cross-disciplinary activities
Timeline:

1-Year

- Conclude 1 collaborative agreement between the BHIRC and an external institute or university for joint research
- Expand the colloquia into department seminar, where each faculty within the department should present at least once each year
- Assist the department faculty to establish their lab website and help advertise their research work

3-Year

- Conclude 2 collaborative agreements between the BHIRC and an external institute or university for joint research
- Identify several important research fields in Bio Health Informatics and potential interested collaborators in medical school
- Start joint seminars and joint or adjunct (courtesy) faculty appointment with those departments in collaboration.
- Each tenure-track and tenured faculty should have at least one collaborative publication with those outside of the department.

5-Year

- Build a department web portal for advertising and sharing the software tools of our faculty
- Each tenure-track and tenured faculty should serve as co-PI/co-I in at least one collaborative grant

Strategic Area 2: Undergraduate Programs

2.1. *Increase undergraduate application and enrollment and improve student quality.*

(Lisa for HIM and Saptarshi/Huanmei for BMI)

**Goal:** Increase undergraduate application enrollment, and improve student quality.

**Action items:**

- Hold an individual Health Information Management event with Seniors presenting their Practicum Projects. Invitations sent to all of the current sites and the potential sites.
- Program Directors will be visiting other colleges and programs and explain that the students will have the option to apply and transfer their eligible credits.
- Team will give lectures to the University College students to educate on the fields of HIM and BMI.
- Program Directors are working with the Recruitment team to help them have the tools to speak to the high schools (Lisa).
- Increase the standard for the undergraduate admissions. For example, there will
be the GPA 2.5 minimum from 2.0 previously.

**Timeline:**

1-Year:
- Accomplish 10 speaking engagements, complete 1 articulation agreement and staff present to UColl minimum 2 times a year

3-Year:
- Accomplish 20 speaking engagements, complete 4 articulation agreements and staff present to UColl minimum 3 times a year
- Hold yearly event, with invitation to Crispus Attucks students and all the currently applied students to teach about the Health Information Management Program.

5-Year:
- Accomplish 30 speaking engagements, complete 6 articulation agreements

2.2. **Improve the quality of experiential learning and integrate research, development, entrepreneurship and innovation.**

**Goal:** Diversify student learning styles, provide research opportunities, and offer practicum and entrepreneurship opportunities to students.

**Action Items:**
- Work with students on different learning styles and tools. For example, in HIM, MindTap will be applied to equip the students to do multiple learning styles at once to see which are cohesive the them individually
- Student will have some research in each of their classes; there will be one large research class that the students must pass in order to graduate so that it prepares them for having the capability to try to pursue research, grants, and private funding in areas of interest
- Practicums for students will include consulting areas so that students can decide if they are interested in entrepreneurship or if they have creativity that are interested in innovating in areas of change
- Instructors will make sure that all books and courses are updated each semester to keep the course up on changes in the field and students can stay ahead of the industry curve
- Health Information Management team will work on updating Practicum and Internship sites. Building more Community Engagement and employment potential for the undergraduate students.

**Timeline:**

1-Year:
- Have strong senior students do all steps and submit actual grants into an agency for possibility of funding so they can experience research steps and requirements. One group of students are those enrolled in HIM400.
3-Year:
- Excellent senior students will submit not only for grants but to be published in an area of research or need for Health Information Management that interests them so they can show creativity to employers
- Hold specific event for the Health Information Management Program showing accomplishments. Invite the current and potential sites in order to hold potential job fair at the completion for all the current and the graduating students in many potential areas of their field.

5-Year:
- Each undergraduate Practicum student will do one semester in consulting or be involved in a project that involves an area of entrepreneurship before they are finished with their senior year

2.3. **Maximize retention and graduation.**

**Goal:** Provide efficient student advising and tutoring, improve tracking on student progress, and offer help for students in and out of the classroom.

**Action Items:**
- Advisors will work with the education team to evaluate students to make sure they are on track for graduation
- Education team will offer online and on-grounds tutoring for students that are struggling to make sure they are assisted in areas of weakness
- SIS system will assist the instructors and education team so that there is tracking and they are able to flag students when there is a decrease in work or attendance so that the student can have feedback and assistance to make sure that they have what they need not just in the classroom.
- Health Information Management team will give the potential of open and anonymous feedback multiple times a semester to get feedback on areas of improvement.
- Students will be given the option of extended due date to allow them some flexibility, there will be 10% deduction to try to discourage yet allow them to continue in their education

**Timeline:**

1-Year:
- Advisors will meet with the undergraduate instructors biweekly to discuss students that may be struggling to make sure they reach out as well as the instructors reach out to the students. Flags are sent on a weekly bases with emails to remind the students of hours of tutoring and ask if assistance is needed.
• Required tutoring if below a certain grade. Specific tracking to make sure student listens to the required lecture. Tracking of the required Mindtap. This will show how the students learning style is and it will allow the instructor to adapt items to the student. The student should feel more successful.
• Hold an individual Health Information Management event with Seniors presenting their Practicum Projects. Invitations sent to all of the current sites and the potential sites.
• Flexibility on due dates without excessive deductions on points to allow students to work with their daily life.

5-Year:
• Work on tracking students that did not accomplish their degree and see where they fell out of rotation and why. See if they have a better circumstance and have a better chance and completing this degree now. Apply for some grants and funding to help in areas that could allow for offering of more classes to be offered for more rotations to be offered.

2.4. Create new undergraduate degree, minors and certificate programs

Goal: to create new undergraduate degree programs, create minors and certificate programs and recruit students for the new programs.

Action Items:
• Create new undergraduate degrees in biomedical Informatics.
  • Do analysis of the Biomedical Informatics requirements and any secondary accreditation needs
  • Build the core classes and prepare them for implementing
  • Advertise and recruit for the new program
• Create new minor and certificate programs minors in HIM for students in other IUPUI programs
  • Build minor in Data Analysis and submit to academics
  • Build minor in Clinical Documentation Improvement and submit to academics
  • Build minor in Health Information Management and submit to academics
  • Build minor in Public Health and submit to academics
• Create new certificate programs for international partners
  • Build a Post Bachelor Certificate in HIM for individuals to sit for the RHIA exam
  • Adjust classes to meet the CAHIIM requirements for the Certificate students to sit for exam

Timeline:
1-Year:
• develop proposal for the BMI program and submit for approval
• develop proposal for new minor in HIM for Health Informatics
• develop certificate programs for international partners
3-Year:
• Advertise and recruit students for the International Students
• Build Minor for Public Health in Health Information Management
• Build 4+1 for HIM to MPH for students to have choices on their Master Accelerated Programs

5-Year:
• Create minors and certificate programs for the BMI
• Seek external accreditation for the BMI program

2.5. Develop new basic courses for Idew program.

Goal: Develop new basic courses for Idew program

Action Items:
• Meet with Idew team to find out about areas of weakness that need development
• Have team build modules to present in local high schools

Timeline:
1-Year:
• Engage the HIM department in building a module for students in program to start a “Family Based Health Record” and build the Undergraduate Certificate Program

3-Year:
• HIM department meet with students in their Junior year to start getting them excited about SOIC and even HIM regarding the different areas of expertise they could try and have the Undergraduate Minors implemented

5-Year:
• Have 6 traditional students possibly Idew Students enroll in the HIM area and have increase in students by 50% due to newer choices in degrees and minors.

Strategic Area 3: Graduate Programs

3.1. Recruitment and retention successful academia (researchers and teachers)

Goal: To educate and train the next generation of professional in bio and health informatics. As professional informaticians in bio and/or health work in a variety of settings – universities, research labs, health care and other life science industries – our program offers a wide range of research and educational opportunities for students pursuing their graduate degree(s).

Action Items:
• Market open tenure and tenure track positions until positions filled:
• Using social networks
• Professional organizations and venues
• Advertisement in professional journals and academic newsletters
• Just-in-time faculty (tenure and non-tenure track) recruitment matching student population growth
• Plan for course release, sabbatical leaves, retirement and resignation replacement.
• Providing and supporting ongoing professional development programs for faculty

**Timeline:**

1-Year:
• Hire tenure and non-tenure track faculty in each program (health and bio-informatics) to match student growth. Preference will be given to senior faculty.

3-Year:
• Hire sufficient TTand NT faculty for each program in the next years to serve student population

5-Year:
• Increase faculty total to support future growth of each program: Bio and Health Informatics:

  3.2. *Increase the applications and enrollment in bioinformatics and health informatics graduate programs*

**Goals:** Devise better recruitment plan for graduate students, to provide more funding to students, and to provide improved services to students

**Action Items:**
• For PhD candidates
  • Devise recruitment plan for predoctoral applicants
  • Formalize admission process to retain the “best” applicants
    • Average 2 doctoral students assigned to research faculty
    • Collaboration with other schools on campus
    • Provide funding of full-time students
• Masters students
  • Increase the number of admitted students by an average of 10/year to reach a level of about 60 students in Bio and maintain current level in Health Informatics within resource constraints
  • Promote the 4+1 programs in Bio and Health informatics:
    • Bio about 5 students per year
    • Health up to 20 students per year
  • Continously update Biomedical Data Science concentration (MS) based on market demand
  • Support Bio and Health Informatics workforce by offering flexible educational
programs (online, seminars,..).

Timeline:
1-Year:
• Devise recruitment plan for applicants of PhD and Master’s programs
• Maintain the number of admitted graduate students

3-Year:
• Assign each research faculty at least one PhD student

5-Year:
• Assign research faculty 2 PhD students on average

3.3.  Certificate programs in BioHealth Informatics

Goal: Support and revise concentrations and certificates in Bio and Health informatics based on market demands.

Action Items:
• Strengthen offering of current Health Informatics certificates (5) with potential transition into MS
  • Consider joint offerings with RI, SOM and SON
  • Provide prep sessions for professional certifications (AMIA, ANA, BMC)
  • Consider workshop offerings for those seeking non-academic professional development

Timeline:
1-Year:
• Assess market demands for academic and non-academic professional development

3-Year:
• Develop the programs as defined in the market demand.

5-Year:
• Assess success and need of developed programs for continuation.

3.4.  Health Informatics: CAHII M accreditation -

Goal: To maintain accreditation to confirm the quality and conformity of the curricula with the nationally set standards for HI education.

Action Items:
• Ongoing curriculum review to meet the accreditation standards.
• Active faculty participation in accreditation committees
• Systematic collection of the students’ achieved competencies for HI.

**Timeline:**

**1-Year:**
• Update course objectives and related assignments to transition to competency – driven curricula.
• Maintain accreditation standards
• Apply to offer curricula approved for national professional and interprofessional credentialing in HI or related fields.

**3-Year:**
• Offer approved curricula allowing students to sit for credentialing exams (AHIC or ABGM,...) upon graduation.
• Propose Doctor of Practice in Informatics with concentration in Health

**Strategic Area 4: Teaching and Learning**

4.1 *Teaching quality.*

**Goal:** Improve quality of teaching in undergraduate and graduate programs

**Action Items:**
• Maintain program accreditation requirements and keep up to date with the updated requirements
• Maintain syllabi to reflect updated material and teaching and learning methods
• Improve instructional design and instill didactic pedagogy for online teaching
• Encourage faculty to attend workshops related to teaching and learning
• Create a process for peer-review of course content within a program
• Create a unique training infrastructure composed of data, network, tools, methods that can improve student learning in the programs
• Comprehensive curriculum review
  • Annual program review internal and external review every 5yrs
  • Identify needs and overlapping content between the courses in a program
  • Through Market analysis, Peer comparison with other nationally and internationally recognized program

**Timeline:**

**1-Year**
• Each faculty should update course syllabus to reflect core competencies and program learning outcomes
• Program directors should organize a plan for revision of courses
• Program directors should allocate instructors with appropriate skills to teach the courses
• Program directors should apply for accreditation (renewal or approval)
3-Year
• Each faculty should have attended at least one seminar/workshop on teaching and learning, organized within the school or at the university
• Each faculty should have updated their course to reflect appropriate teaching and learning methods, as well as content
• Common training infrastructure should be piloted for at least two courses within a program

5-Year
• Metrics should demonstrate improvement in student engagement, and improvement in student assessments
• Peer review should have been completed for all courses in a program

4.2 \textit{Teaching collaboration.}

\textbf{Goal:} Build collaborative courses and programs in BioHealth Informatics

\textbf{Action Items:}
• Based on market analysis, create certificates by reusing existing courses and work with other programs and schools to share courses
• Conduct curriculum review to adapt existing courses that can be re-used in 4+1 programs with different schools
• Share courses between instructors from different programs, such that multi-disciplinary learning can be incorporated into courses
• Build collaborative teaching and learning programs with national and international university partners including, China, India, the Middle east, and Europe, for both undergraduate and graduate programs

\textbf{Timeline:}
\textbf{1-Year}
• Discuss at avenues such as AMIA academic forum, academic conferences, biomedical working groups on ways to build collaborative programs
• Discuss with program directors within and outside the school, for joint programs and courses that can be shared between departments
• Each faculty should plan a guest lecture in another course in the same program, school or externally at another institution

\textbf{3-Year}
• Pilot a course by alternating instructors between programs for a course between semesters
• Begin negotiations to build collaborative programs between schools and other universities
• Each faculty should have given a guest lecture in another course in the program, school or externally at another institution
5-Year
- Pilot a shared degree program with at least one university partnership
- Modify course material, teaching and learning methods for multi-disciplinary/multi-program courses

4.3 Scholarship of teaching.

Goal: Encourage faculty and PhD students to conduct research on scholarship of teaching and learning

Action Items:
- Give faculty opportunity to develop and revise courses to create a comprehensive curriculum
- Include courses to suite VARK learning types
- Develop new methods for multi-disciplinary teaching and learning in BioHealth Informatics
- Encourage faculty to apply for teaching and learning grants
- Publish scholarship in teaching and learning at conferences and journals related to biomedical informatics

Timeline:
1-Year
- Each faculty should discuss with program directors on courses that they would like to revise and improve
- Each faculty should adapt new teaching and learning methods to update courses

3-Year
- Faculty should be encouraged to publish or present scholarship of teaching at a conference
- At least one program faculty should have applied to a teaching related grant, internally or extramural organization

5-Year
- Each faculty should have contributed to some teaching related research
- Each faculty should have modified courses with innovative teaching and learning methods, developed for their course-related material

Strategic Area 5: Civic Engagement, Service and Diversity

5.1. Impact the community, nation and globe through civically engaged research, service and community outreach.

Goal: to encourage faculty and student involving in community services and provide feedback to the society
Action Items:
- Encourage students to be active in national activities, such as the CHIME National Patient ID Challenge
- Encourage faculty and students to be the member of the society or organization in their fields
- Promote faculty and students to take leadership roles in the association in their fields
- Provide professional services to their professional fields, such as conference organizers, reviewers, and program committees

Timeline:
1-Year:
- Encourage all faculty participate in some civically engaged activities (100% participation)

3-Year:
- Promote students in civil engagement
- Build at least one signature areas in civil engagement
- At least one faculty taking national leadership role each year

5-Year:
- Promote our name in civically engagement to be recognized

5.2. **Build strong collaborations with Indiana Healthcare industry**

**Goal:** to work with local healthcare centers including community health centers, research centers, primary care associations, hospitals with joint research and training projects and grants

Action Items:
- Connect with these healthcare centers for students professional practice experience sites, especially for HIM and health informatics
- Work with CHCs, PCAs, and other centers for joint research projects and grants.
- Work with the centers for student internships

Timeline:
1-Year:
- Build the connection
- Initiate collaborative research and training activities

3-Year:
- Work and submit joint projects
- Setup formal practice sites
5-Year:
- Make our connection with local healthcare centers as a signature area for workforce development in healthcare

5.3. Build advisory boards for the departments and specific programs

Goal: Obtain feedback from professionals to ensure that the programs are meeting the demands of the education, industry, profession, and job markets, to meet accreditation standards for the corresponding programs.

Action Items:
- Form the advisory board members with diversified background
- Start regular meetings
- Formalize the advisory board functions and processes
- Obtain, prioritize and implement the advices from the board meetings.

Timeline:
1-Year:
- Form the advisory board members
- Start the regular board meetings

3-Year:
- Formalize the advisory board structures and meeting schedules
- Implement the suggestions from the advisory board members

5-Year:
- Make the advisory board meeting an integral part of the department, which promote and help the growth of the department