

B.S. Health Informatics

Oregon Tech Assessment Report

2019-20

Program Description and History

Prior to Fall 2015 the Management department offered a degree in Information Technology – Option in Health Informatics. As of Fall 2015 new students are being transitioned into the B.S. of Health Informatics. The B.S. Health Informatics was first offered at Oregon Tech in 2015. The data within this report summarizes assessment activities for both the Information Technology – Health Informatics Option and the B.S. Health Informatics degrees.

The Health Informatics undergraduate program, the first of its kind in the Oregon University System, is an option within the Department of Information Technology at Oregon Tech. Health Informatics prepares students for a career as information and computing specialists in the health care field. The Health Informatics program gives students a strong background in business management, information systems, computing science and health care providing students with the necessary knowledge and skills in the field of health informatics.

Health informatics professionals work in operational and management positions throughout the health care industry in such locales as hospitals, clinics, managed care organizations, software vendors and government agencies. The Health Informatics program was awarded accreditation by the International Accreditation Council for Business Education (IACBE) in 2008 and was awarded reaffirmation of accreditation in 2015.

Program Highlights

Program Enrollment, Graduation and Employment Rates

Total enrollment across all campuses is approximately 24 students; 3 at the Klamath Falls campus, 10 in Wilsonville, and 11 online. The program graduated 8 students for 2019. The three-year annual starting salaries averaged \$56,000. The program has a 100% success rate (within six months of graduation students are employed or in graduate school).

Industry Relationships

Industry relationships for the Health Informatics degree program in the 2019-20 assessment period increased in both depth and breadth. These relationships translate to internships, senior project opportunities, and job offers after graduation. The growing list of industry partners that demonstrate interest in Health Informatics students and graduating seniors include:

- Sky Lakes Medical Center
- Cascade Health Alliance
- Klamath Health Partnership
- Western Oregon Advanced Health
- Klamath Basin Behavioral Health
- Mosaic Medical Center
Providence
- Kaiser Permanente
- VA
- Huron Consulting
- State of Oregon
- OHSU

This group represents tremendous potential for students to engage with industry as both students and alumni.

Student Learning Experiences

The following are examples of student learning experiences in Health Informatics:

- An Internship at OHSU doing data mining and analysis. This student was offered an additional internship position before graduating.
- The development of a customized Electronic health care system for small dental group
- A data analysis project on Mental Health Factors in Portland Oregon
- The development of HIPAA Compliance Guide for Independent Practitioners -
“The HIPAA Compliance Guide for Independent Practitioners (Simply HIPAA) will be a guide targeted towards independent health practitioners who are required to achieve HIPAA compliance. HIPAA (Health Insurance Portability and Accountability Act) is a secure configuration policy that defines technical and physical controls that health care providers must use when handling private patient information (Office for Civil Rights, 2013).”
- Analysis of Provider Efficiency Profile Salem Health Medical Group
“Salem Health Medical Group (SHMG) operates eight Family Medicine clinics with a total of 22 Primary Care providers. The clinic's operations days and hours are Monday- Friday, 08:00 am – 5:00 pm, with some clinics having an exemption of extending operations one day a week up to 08:00 pm. All clinical documentation is expected to happen within the working hours, but this is not the cases for SHMG providers. There is documentation occurring outside clinical hours raising concerns among providers, SHMG operations, and the clinical informatics department. Documentation time is significant when it comes to the evaluation of EHRs impacts, and therefore the primary focus of this project will be concentrated on SHMG providers documentation within Salem Health's Epic EHR system.”
- NAMI (National Alliance on Mental Illness) of Clackamas County, a nonprofit mental health organization process improvement project.
“Efforts for process improvement, a workflow analysis is desired to identify technological solutions to assist with potential integration of their various software applications that have made completing work efficiently a challenge.”

Success Stories

Health Informatics students speak highly of the courses they take as evidenced by course evaluations, but many students also comment on the tremendous learning experiences provided through their internships and senior projects. In addition, Health Informatics has a 100% success rate. Below are two such experiences shared by industry project sponsors over this assessment period.

- “Moving her degree from IT to HI gave her the ability to successfully gain internship opportunities with Kaiser Permanente when she was struggling to get an interview under the IT degree.”
- “Developed a customized electronic health care system for a local dental company in Wilsonville OR. Organization wanted to evaluate functions and feature before adoption. She was successful in showing the organization the benefits of a customized EHR.”

Program Purpose

Bachelor of Science in Health Informatics Mission

The Health Informatics degree fully prepares students to assume positions in information technology departments to enhance quality and operations for the health industry.

Educational Objectives

1. The Health Informatics degree program prepares students to interpret health policy and systems, with the ability to integrate policies into the healthcare agency.
2. The Health Informatics program prepares students to analyze, design and develop information systems that enhance operational efficiencies and strategic goals of the organization.
3. The Health Informatics program prepares students to analyze data and utilize analytic technologies to improve the organization's efficiencies and operational effectiveness.

Management Department Student Learning Outcomes (SLO)

The Health Informatics degree consists of the five core Management Department student learning outcomes. Upon completion of this program, Health Informatics graduates will be able to:

1. Communicate the major concepts in the functional areas of accounting, marketing, finance, information technology, and management.
2. Describe the legal, social, ethical, and economic environments of business in a global context.
3. Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.
4. Demonstrate professional communication and behavior.
5. Apply knowledge of business concepts and functions in an integrated manner.

Program Student Learning Outcomes (PSLO)

Upon completion of this program, Health Informatics graduates will be able to:

1. Interpret health policy and systems
2. Design and implement information systems
3. Apply knowledge of statistical concepts to analyze data (will assess starting in 2019-20)

Assessment Cycle

Assessment Schedule

1. **Oregon Tech's Essential Student Learning Outcomes:** ESLOs are assessed on a six-year cycle. The ESLO assessment schedule may be found on the Oregon Tech website under Essential Student Learning Outcomes.
2. **Department Level Student Learning Outcomes:** IACBE requires all accredited institutions to complete a Public Disclosure of Student Achievement on an annual basis. In addition, all outcomes are assessed annually, with the full self-study for IACBE core student learning outcomes (Core SLOs 1-5) completed every seven years.

Outcomes:	Direct	Indirect
Communicate the major concepts in the functional areas of accounting, marketing, finance, information technology, and management.	<ul style="list-style-type: none"> • Case Study • Senior Project 	<ul style="list-style-type: none"> • Senior Exit Survey
Describe the legal, social, ethical, and economic environments of business in a global context.	<ul style="list-style-type: none"> • Case Study • Senior Project 	<ul style="list-style-type: none"> • Senior Exit Survey
Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.	<ul style="list-style-type: none"> • Case Study • Senior Project 	<ul style="list-style-type: none"> • Senior Exit Survey
Demonstrate professional communication and behavior.	<ul style="list-style-type: none"> • Case Study • Senior Project 	<ul style="list-style-type: none"> • Senior Exit Survey

Apply knowledge of business concepts and functions in an integrated manner.	<ul style="list-style-type: none"> • Case Study • Senior Project 	<ul style="list-style-type: none"> • Senior Exit survey
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Program Student Learning Outcomes: Program Based Annual Assessment Schedule and Activity

Outcomes:	Direct	Indirect
Interpret health policy and systems	<ul style="list-style-type: none"> • Senior Project • Community project 	<ul style="list-style-type: none"> • Senior Exit Survey
Design and implement information systems	<ul style="list-style-type: none"> • Senior Project • Systems Design Project 	<ul style="list-style-type: none"> • Senior Exit Survey

Evidence of Improvement in Student Learning

1. Department Level Student Learning Outcomes, Activities and Results

Management Department			
Program Outcomes	Minimal Acceptable Performance	Assessment from 2019-20	Results from 2019-20
Communicate the major concepts in the functional areas of accounting, marketing, finance, information technology, and management.	80% achieve a rate of 3 or 4	Senior Project N=74	88%
	80% achieve a rate of 3 or 4	Case Study N=89	88%
	80% score 4, 5, or 6	Senior Exit Survey N=81	85%
Describe the legal, social, ethical, and economic environments of business in a global context.	80% achieve a rate of 3 or 4.	Senior Project	88%
	80% achieve a rate of 3 or 4	Case Study	87%
	80% score 4, 5, or 6	Senior Exit Survey	91%
Solve organization problems, individually and/or in teams, using quantitative, qualitative, and technology-enhanced approaches.	80% achieve a rate of 3 or 4.	Senior Project	88%
	80% achieve a rate of 3 or 4	Case Study	82%
	80% score 4, 5, or 6	Senior Exit Survey	96%
Demonstrate professional communication and behavior.	80% achieve a rate of 3 or 4.	Senior Project	81%
	80% achieve a rate of 3 or 4	Case Study	87%
	80% score 4, 5, or 6	Senior Exit Survey	98%
Apply knowledge of business concepts and functions in an integrated manner.	80% achieve a rate of 3 or 4	Senior Project	80%
	80% achieve a rate of 3 or 4	Case Study	88%
	80% score 4, 5, or 6	Senior Exit Survey	99%

Department Level: SLOs

During the past few years, the Department SLOs and assessment plan was significantly streamlined. During 2017-18 the department assessed SLOs with two direct and one indirect methods - Case Study (BUS478) and Senior Project, and Student Exit Survey. During the 2018-19 academic year, the department focused on reviewing the senior project using a qualitative survey. Based on that review, the senior project group worked together to update the senior project rubric to ensure that it could be applied to projects in all majors. In addition, the department updated the SLOs prior to our self-study. Student learning outcomes through the end of the year 2019-20:

- Communicate the major concepts in them functional areas of accounting, marketing, finance, information technology and management.
- Describe the legal, social, ethical and economic environments of business in an internal/external (global) context.
- Solve organization problems, individually and/or in teams, using quantitative, qualitative, technology-enhanced approaches.
- Demonstrate professional communication and behavior.
- Apply knowledge of business concepts and functions in an integrated manner.

New SLOS (starting 2020-21)

- Apply core concepts in a business environment.
- Describe the legal, ethical, social, and economic environments of business in a global context.
- Contribute to the development of a team-oriented and collaborative environment.
- Solve business problems using decision-support tools and/or research skills.
- Demonstrate professional communication and behavior using a variety of delivery methods.
- Analyze business concepts and apply strategic planning skills to effect change in an integrated manner.

Closing the Loop: Describe any actions taken and re-assessment done during (2019-20) in direct response to assessment findings from prior academic years.

- **Senior Project:** In the 2018-19 academic year the department conducted a qualitative review of senior projects. That review found that the goals among the different majors in the department were not completely aligned. In 2019-20, the department took steps to address this issue.
 - **Closing the Loop Activities:** During the 2018-19 academic year, the department faculty focused our assessment efforts on a qualitative review of senior projects. A small sample of projects from each major was compiled. Each faculty reviewed multiple projects and completed a qualitative survey tool that was tied to department outcomes and the senior project rubric. The result of this assessment uncovered two area that need further exploration:
 - **Senior Project Rubric:** The senior project rubric was either not being utilized or being used in an inconsistent way. Based on this discovery, the department brought together the senior project faculty together during 2019-20 for a series of meetings to update the rubric used to guide and assess the senior projects. This led to a refocus on common goals among the faculty and an updated rubric that fulfills the goals for all business management majors. This rubric was implemented during the spring of 2020.
 - **Student Learning Outcomes (Department-level):** In addition, the department updated the Student Learning Outcomes for the department in an effort to update the SLO to more closely align with the requirements of the our assessment body, IACBE. In addition, it was determined that the senior project would focus on SLOs 1,3, 4, and 5 as we move into 2020-21.

- **Case Study:** The plan for the 2019-20 year was for the course faculty to continue to discuss their approaches and share ideas for the Strategic Management course and the assignment. As with the senior project refining the approach to this class and assessment may be able to pinpoint areas of improvement.
 - **Closing the Loop Activities:** The two faculty that teach the Strategic Management class did engage in discussions regarding approaches to the case study assignment. While one faculty include the assessment in one assignment, the other spreads out the components of the assignment over the term. During the 2019-20 academic year, the case study was discussed as part of the update of student learning outcomes. The decision was made that moving forward, rather than assessing all SLOS in the case study, the department would only focus in on two - #2 and 6, which more closely aligns with the course content.
- **Senior Exit Survey:** During the 2019-20 academic year, the faculty determined we will make another adjustment to the senior exit survey. The question asked for student to rate their understanding of the SLOs. Previously we had changed the word proficiency with understanding since this will more accurately focus on the question's intent. During the 2019-20 academic year, there was improvements in the area of finance and accounting, which we believe more accurately reflects the program results.
 - **Closing the Loop Activities:** The results of the exit survey for the 2019-20 year nearly met the 80% threshold for all SLOs which is an improvement from prior years. The word change to understanding did make an impact. The senior exit survey will be updated for the 20-21 year to include the new SLOs. As we move forward with the new SLOs, a comparison with the prior SLOS will be completed.
- **Operational Strategies and Improvements:** Approximately three years ago the department develop an Action Plan document that is tied to our department's strategic plan. This plan directly supports the mission of Oregon Tech. The Action plan is broken into the following themes:
 - **College of Business:** The department is working to create a separate college at Oregon Tech to better support and highlight our programs. The plans for this area includes the development of a business plan, budget and balanced scorecard, as well as rebuilding our advisory board for college-level, and the development of showcase spaces on the campus.
 - **Enrollment/Outreach/Retention/Marketing:** Work in this area includes the development and expansion of the very successful Jump into Business program. During the 2019-20 year, the program added five new high schools including one of the largest business clubs in the state. Other work in this area include developing a formal retention program, and extending our marketing efforts.
 - **Quality Programs/Curriculum:** We continue to improve all of our 11 programs through program development, continual improvement, online standards and oversight. In the last two years the department added the Cybersecurity program. The department also expanded our Business Management program to online and is currently waiting for approval to expand Healthcare and Business Management to our Portland Metro campus. Moreover, during the 2019-20 year, the department streamlined course offerings to provide better communication with students. During the 2019-20, the department started to develop three masters programs.
 - **Labs/Facilities:** Because many of our programs can be enhanced by quality labs and spaces, during the 2019-20 the department developed space plans for the new CEET building.
 - **Increased Reputation/Alumni/Industry Engagement:** During the 2019-20 year, the department recommitted efforts to engage students in national competitions. We also

continued to promote our students' project through social media and press releases. We also took steps to rebuild our advisory board.

- **Resources:** The department continues to align our resources with our departmental goals and objectives. We developed a model to better align the stipend/release model to focus on these goals, however the administration stalled the program making it challenging to align goals with resources.

2. Program Student Learning Outcomes, Activities and Results

Health Informatics			
Program Outcomes	Minimal Acceptable Performance	Assessment from 2019-20	Results from 2019-20
Interpret health policy and systems	80% achieve a rate of 3 or 4	Senior Project N=4	100%
	80% achieve a rate of 3 or 4	Community Project N=3	80%
	80% score 4, 5, or 6	Senior Exit Survey N=5	100%
Design and implement information systems	80% achieve a rate of 3 or 4.	Senior Project N=4	100%
	80% achieve a rate of 3 or 4	System Design Project N=2	100%
	80% score 4, 5, or 6	Senior Exit Survey N=5	100%

Program Level Review: Results, Closing the Loop of Prior Action Plans, and Action Plans for this academic year:

- **2019-20 Results:**

Closing the Loop Activities: Past action plan was to review Health Informatics Degree courses, launch MIS 334 Business Analytics and MIS 446 Data Mining. New courses were launched however the degree will need a review this AY to strengthen the degree if there are areas identified.

Currently the HI degree does not include some of our departments required courses Operations Management and Human Resources. These courses do need to be added to the HI degree. Currently the degree including the IT core courses, General Ed and Business core leaves room for 9 credits for the HI degree. MIS 255, MIS 345 and MIS 357 are the unique HI core. With a limit of 9 units the courses need to be redesigned to ensure maximum output.

MIS 442 Advanced Web Programming: In this course students are evaluated on their ability to create a system scope, design and build a web application as their final project. Students tend to struggle between requirements gathering to design concept. One hurdle for faculty has been students wanting to assume what requirements are needed and jumping straight to creating their solution. While students believe they have all the requirements this leads to systems that do not get completed, typically dropping students scores in this area.

Sr. project: As identified above, senior project scores are meeting expectation as an average but are dropping annually and were finding more students dropping out of the project process or taking longer to complete. The implementation of focus areas should strengthen a skillset for students to create a more successful project.

MIS 345 Health Info systems and communication systems:

The outcome is student's ability to review and interpret health systems. Naturally this course has been focused around a community project. In an industry practice there are times the project students are working on does not necessarily lend well to the student's ability to disseminate the health system or policy their project interacts with. In the community project environment not all projects are created equal but the value of community interaction, application, communication, teamwork and growth is significant.

- **Action Plans for 2020-21:** Due to the issues noted above, the following actions will continue:
 1. Review the HI curriculum map and revise re-align with IACBE departmental requirements.
 2. BUS 313 is the only course where health systems is studied. The faculty will review if other courses need to follow up on the content or introduce a requirement to sr. project.
 3. Enrollment in the HI program continues to struggle for enrollment and is spread thin among three locations. Continued research in enhancing the degrees appeal through either a Post Graduate Certificate Program or Masters of Science offering will be reviewed.
 4. MIS 357 will run for the first time in a few years providing faculty an opportunity to review currency and decide how to revise the course.
 5. MIS 345 was cancelled this year due to low enrollment. Further this course is a community based course and due to COVID-19 regulations wouldn't have been able to be ran in the regular fashion. A revised project will need to be introduced for next year if COVID precautions remain in place for 2021-2022. Faculty will review ways to incorporate the PSLO of Health Systems and Policy Interpretation as an independent module or specifically crate an activity to aid students in the interpretation process.