

OPTIMIZING THE MASTER OF SCIENCE DEGREE IN HEALTH INFORMATICS AND INFORMATION MANAGEMENT—PART 2

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by Ray Hales Hylock, PhD; Paul David Bell, PhD, RHIA, CTR; Susie Tolar Harris, PhD, MBA, RHIA, CCS, FAHIMA; James Anthony Woodward; and Robert James Campbell, EdD, CPEHR, CPHIMS

Abstract

The Master of Science in Health Informatics and Information Management (MS in HIIM) at East Carolina University commenced in the fall of 2013 in response to AHIMA's call for more graduate programs. In this article (the second of a three-part series), we discuss the need for optimization of the program and describe the process undertaken during initial revision of the MS in HIIM. We begin with competition analysis and describe how the deficiencies identified led to the creation of a committee charged with optimizing the program. The construction of the committee, framework for evaluation, completed assessment, and prescribed outcomes are detailed. The committee recommended administrative, programmatic, and sequencing alterations to improve competitiveness, consolidate options, and better serve students. These alterations are discussed at length, and subsequent institutional steps to implement the suggested changes are presented. Lastly, we discuss ongoing modifications to the MS in HIIM, illustrating the fluid and cyclical process of program review and enhancement.

Keywords: health informatics program; health information management program; master's program; optimization

Introduction

In the [first part](#) of this three-part series,¹ we described the construction of the Master of Science (MS) in Health Informatics and Information Management (HIIM) program at East Carolina University (ECU). The intent of the program was to serve the expanding pool of students seeking master's-level education that would result in eligibility to sit for the Registered Health Information Administrator (RHIA) exam.² The MS in HIIM curriculum was designed to suit this need, and three options emerged.

The RHIA option represented the intended design of the MS in HIIM as noted. The second and third options (i.e., thesis and nonthesis options) modified the curriculum to produce a more health informatics (HI)-oriented focus. Graduates of the thesis and nonthesis options were not eligible to sit for the RHIA exam but were exposed to topics such as information systems, decision support, and software engineering. Interested parties included information technology and systems professionals, programmers, project managers, and database administrators attracted to technical careers in healthcare.

When the MS in HIIM program commenced in the fall of 2013, the three options each required 48 semester credit hours (SCH). As depicted in [Figure 1](#), this requirement included 12 core courses (36

SCH) and four concentration courses (12 SCH). The equivalent requirements for the different options were established out of convenience and necessity because of resource constraints within the department. That is, it was not possible to establish two significantly diverging paths (i.e., health information management and HI) within the master's degree because the anticipated class sizes (especially in HI) were small, faculty workloads were extended to maximum capacity, and faculty alone were responsible for program administration and advising. These constraints placed significant strain on already depleted resources, necessitating integration of the options. The estimated program completion time for full-time students was 2 to 2.5 years, with an additional year for part-time students.

Immediately after inception of the program, the MS in HIIM leadership team began monitoring and evaluating the program in search of ways to improve its content and delivery. The team soon realized that while the RHIA option was competitive with other programs in terms of credit hours, the thesis and nonthesis options were not. This realization spurred efforts to optimize the MS in HIIM program beginning in the spring of 2014.

In this article (part two of the three-part series), we discuss the evaluation and optimization process. The original analysis leading to the proposed optimization, committee findings, updated curriculum, modification process, and timeline for completing the modifications are detailed. Furthermore, ongoing efforts to consolidate graduate programs with overlapping interests are presented.

Evaluating the MS in HIIM

Seeing the idea of a master's program through to fruition requires years of effort, countless meetings, writing and revising hundreds of pages, conceiving a novel curriculum, proposing new courses, following complex and bureaucratic approval processes, and securing faculty backing. However, this process is only the beginning. After the program is in place, necessary tasks include marketing the program and recruiting students (see [part one](#) of this series³) as well as monitoring, evaluating, and adjusting elements of the program and its interrelationship with existing programs. In this section, we focus on the initial evaluation of the MS in HIIM program.

Competitiveness Evaluation

Routine evaluation of a program is essential to confirm adherence to accreditation standards, ascertain effectiveness of the curriculum, ensure that the content prepares students for the workforce, and safeguard the program's competitiveness. The MS in HIIM began during the formative years of master's programs in HI and HIM nationwide. At the time, only four MS in HI and five MS in HIM accredited programs existed.⁴ Nonaccredited programs existed but were few in number and highly specialized to the needs of their institutions and students.

At the time, our focus was the professional student seeking RHIA certification, with programmatic support for those interested in HI. However, with the influx of HI and HIM programs both applying for and receiving accreditation,⁵ the efforts of the American Health Information Management Association (AHIMA)^{6,7} and the American Medical Informatics Association (AMIA)^{8,9} to establish concrete and contending HI standards and credentials, and the unprecedented growth of the fields,¹⁰⁻¹² the market quickly became quite competitive—particularly in an environment dominated by online education. Therefore, to attract top prospects and retain our high standing,¹³⁻¹⁶ we undertook a detailed reevaluation of all the options, granting equal weight to both the HIM and HI foci.

In the spring of 2014, we undertook our initial evaluation. In the first year, the emphasis was on ensuring that competencies were addressed and that the program was competitive with existing and emerging degree programs. The gap analysis proceeded in an orderly fashion and played no major role in our competitiveness evaluation because we were adhering to generally accepted accreditation standards. It did, however, play an important role during optimization, and therefore it is discussed in that section below. The remainder of this section focuses on program competitiveness in terms of SCH. Tuition factors into competitiveness but is beyond our ability to control. That being said, the programs at ECU, and the MS in particular, are nationally regarded.¹⁷⁻²⁰

Methods

We compared the MS in HIIM against three program cohorts in terms of required SCH. The first comparison was with the 11 degrees offered by the nine programs accredited by the Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM).²¹ Although our program did not follow the MS in HIM curriculum (rather, it followed the MS in HI curriculum), it adhered to the same baccalaureate requirements for accreditation mandated for RHIA eligibility. Thus, the RHIA and thesis/nonthesis options could be compared on equal footing with the MS in HIM and MS in HI accredited programs, respectively.

However, comparison with accredited programs is insufficient for relatively unstandardized degree programs, such as the MS in HI. For example, MS in HI program accreditation is not currently necessary for students to achieve eligibility to sit for a certification exam, although this is expected to change when AHIMA^{22,23} and AMIA^{24,25} standards and credentials become as widely adopted and valued by employers as the RHIA credential is today. Therefore, our second set of comparisons focused on unaccredited programs competing directly against our own. Two universities offering such programs were identified during our analysis: the University of North Carolina at Chapel Hill and the University of North Carolina at Charlotte. Both offer similar, unaccredited master's degrees and

contend for the same students, especially at the state level.

Lastly, we considered the competitive landscape within our own institution. Intra-university marketing is an efficient and cost-effective way to reach many potential students. Whether through university-sponsored events, advising sessions, or open houses, programs are given direct access to current students to promote internal degrees. Therefore, one must consider the competitive landscape within the institution. Thus, the analysis was extended to incorporate all master's-level programs within ECU.

Results and Discussion

The RHIA option was found to be consistent with peer institutions' programs. The 48 SCH placed the program in the middle of the pool. The average accredited program required the completion of 50.25 ± 11.97 SCH. We therefore determined that the modification of the RHIA option did not require a specific focus on credit reduction. This conclusion did not eliminate the need for evaluation of the credit-hour requirement; it meant only that we would not be forced to reduce it.

The results for the thesis and nonthesis options, however, highlighted major credit hour concerns. CAHIIM-accredited programs required, on average, 38.00 ± 4.60 SCH. When the unaccredited programs at the University of North Carolina at Chapel Hill and the University of North Carolina at Charlotte were included in the analysis, the total decreased slightly to 37.33 ± 4.24 SCH. Thus, the 48 SCH required by our program was more than two standard deviations above the mean. This finding was corroborated via analysis of internal programs. The master's programs at ECU required an average of 39.17 ± 4.43 SCH, or 35.32 ± 5.15 SCH after clinical/practicum-based programs (e.g., the physician assistant program, which required 99 SCH) were excluded. Thus, the thesis and nonthesis options would require extensive optimization to create more concise curricula consistent with the credit-hour requirements of comparable programs.

Optimizing the MS in HIIM

Modifying a program is a long and arduous process. In the following sections, we discuss the three-step method followed to optimize the MS in HIIM. The first step is to obtain the consent of the department faculty. After consent is obtained, the actual optimization process begins, resulting in a determination of the changes to be made. Lastly, the results of the optimization process must be submitted as official change requests to the appropriate committees for approval prior to adoption. Although these activities and the timeline were specific to our institution, our overall experience is generalizable because many organizations follow similar processes.

Step 1—Proposal and Committee Creation

A proposal to establish an optimization committee was brought to the department at the annual retreat in the spring of 2014. The need and comparisons were shared with the faculty, who unanimously voted for the creation of the MS in HIIM Optimization Committee, charged with streamlining and segmenting the options. This committee consisted of the four-person leadership team (see [part 1](#) of the series for details²⁶) and an MS in HIIM faculty member with a background in HI. The committee met throughout the summer and into the fall.

Step 2—Program Optimization

The initial action of the committee was to ensure that the gap analysis of the MS in HIIM program was current. Many of the courses offered were created exclusively for the master's program and did not exist beyond a proposal before the first year. Thus, the program's gap analysis was continually updated as courses began to be offered. Not every course successfully implemented the designated standards, but gaps were generally offset by the addition of competencies to other courses. It was imperative for the gap analysis to be both comprehensive and complete prior to program modification to avoid introducing gaps and thus rendering the process counterproductive. After the committee determined that the gap analysis was up to date, course evaluations commenced.

The committee identified three possible recommendations for each course: retain, remove, or merge. Retention was indicated as either mandatory or desired. The mandatory retention policy was defined as follows: Courses primarily covering an accreditation standard or necessary for one of our four graduate certificate programs must be retained. The latter consideration was necessary because other departmental programs (e.g., graduate certificates) affect faculty workload. Therefore, removing a course from the master's program might not mean that it could be discontinued entirely. The desired retention designation was established to ensure that courses and subjects deemed necessary by the committee, regardless of accreditation requirements, were retained.

Of the 20 distinct courses in the master's program (see [Figure 1](#)), 17 courses met the definition of mandatory retention. Three of those were recommended strictly because of certificate programs (COHE 6000, COHE 6480, and COHE 6630). The three courses that did not meet the definition of mandatory retention were those offered by external departments (BIOS 7021, MIS 6843, and SENG 6230), which had not been not assigned accreditation standards because of lack of control by our department. The committee determined biostatistics (BIOS 7021) to be of great importance, and this course was thus held under the desired retention policy. For the remaining two courses, syllabi and student feedback were collected.

The MIS course (MIS 6843) was offered by the College of Business and covered standard topics such as project management, modeling, and design. Additionally, the College of Business surcharged \$100 (at the time) per credit hour, meaning that our students paid an additional \$300 for the course. Student feedback was generally positive; however, they felt that the course did not adequately represent the challenges faced in healthcare. Software Engineering (SENG 6230) introduced students to basics such as project management, modeling, design, and programming. No feedback was found because students in our program had yet to take the course.

The outcomes of the optimization process are summarized in three categories: administrative, programmatic, and sequencing. The revised curriculum map in [Figure 2](#) incorporates all outcomes of the optimization process.

Administrative Outcomes

The initial administrative outcome (of three) was the renaming of the options to comply with CAHIIM requirements. Following established naming conventions, we changed “RHIA Option” to “HIM Concentration.” Similarly, the committee merged the thesis and nonthesis options into a single concentration (termed “HI Concentration”), with thesis/internship course options. The consolidation of these options was trivial because they varied by the single thesis/internship course alone.

The second administrative outcome aimed to minimize confusion regarding course sections. Before the optimization, COHE 6600 had been deemed insufficient for the RHIA option. A new course was created to address these deficiencies, but it was offered as a special section within COHE 6600 as opposed to an official course. This was done out of necessity because creating a new course requires a great deal of administrative overhead and time (roughly one year), whereas a section can be added without prior approval. Because this offering was time-sensitive, the special section route was followed. Unfortunately, many students failed to realize the distinction and instead registered for the default (non-MS) section. This problem increased the burden of advising and student distress. Therefore, as part of the optimization process, the special section was made into a new course—COHE 6640, Management of Health Information Systems.

The last administrative outcome was a name change for HIMA 6060. The title “Theories and Applications,” while appropriate for the pre-MS aim of the course, no longer reflected the content and HI intent of the course as modified to accommodate accreditation requirements. Thus, the course was given a new title: “Health Informatics.”

Programmatic Outcomes

The first programmatic outcome was the relegation of COHE 6000 to the foundation level. The course provides a basic overview of the healthcare landscape, something that students with healthcare backgrounds and experience gain little, if anything, from. Thus, for such students, this

change reduced the number of SCH for the program by three. Roughly half of the students enrolled under the new program definition have received COHE 6000 waivers. This course could not be eliminated because it is required by other departmental programs. Thus, this outcome has zero effect on faculty workload, other than slightly reducing the number of students in the course.

Second, the biostatistics course (BIOS 7021), which as noted previously was determined by the committee to be of great importance, was held under the desired retention policy for the HIM concentration only. The HI concentration includes Decision Support in Health Care (COHE 6450), which provides the necessary empirical instruction in that concentration. Thus, the HI concentration was reduced by another three SCH. Because the course is external to our department, no workload adjustment resulted from this change.

Lastly, MIS 6843 and SENG 6230 were combined to form a new, internal course named COHE 6550, Health Informatics Project Design and Management. The justification is as follows. The two courses overlapped considerably in content (albeit from differing perspectives). Most of our students do not have programming backgrounds and are therefore ill equipped for the rigorous graduate-level software engineering course. Although the MS in HI CAHIIM accreditation standards (2012) required programming languages (Facet III.2), the removal of SENG 6230 did not affect the overall program because we had not ascribed any standards to this course, which was not under our department's control. Instead, relevant competencies were met by internally controlled courses that included languages such as intermediate SQL, basic Java, and beginning Python. While one can debate the merits of imperative and object-oriented paradigms and the need to establish an intermediate baseline in both, our perspective was one of understanding concepts, syntax, structure, and development processes beyond language fluency. That said, students are required to display a competent level of ability in the aforementioned languages. The net effect on faculty workload resulting from the creation of the new course was an increase of three SCH.

Overall, the changes reduced the number of SCH from 48 to 39 (42 for students without healthcare experience) in the HI concentration and to 45 (48 for students without healthcare experience) in the HIM concentration. This outcome achieved the goal of minimizing SCH for the HI concentration to acceptable standards. The change to 39 (or 42) SCH in the HI concentration brought it to within one standard deviation of all programs in the comparative pool. A welcomed byproduct of this process was the potential foundation waiver of three SCH for students in the HIM concentration. The overall effect on faculty workload was a permanent increase of one course, COHE 6550.

Sequencing Outcomes

Merging MIS 6843 and SENG 6230 into COHE 6550 provided a few sequencing challenges for students still needing one (for HIM students) or both (for HI students) of these courses. Thus, a special summer course was offered to offset any ill effects the new course would have on those who had expected to take the course or courses in the fall (when originally offered) versus our

placement of the new course in the spring.

One other course sequencing change was made based on instructor feedback. COHE 6430 and COHE 6490 were swapped (fall and spring to spring and fall, respectively) to encourage students to take the foundation course (COHE 6490) before the database course (COHE 6430). The program does not have a set semester sequence because it offers rolling enrollment and has many part-time students. However, the change allows us to encourage enrollment in the course during what is typically a student's inaugural semester (i.e., fall). This change affected the planned course sequence of many students because it resulted in COHE 6490 being offered in consecutive semesters during the 2015 calendar year. COHE 6430 was not offered during this time because we were able to adjust students' plans of study to compensate.

The effect of these sequencing modifications was a one-time workload increase of three SCH for the summer COHE 6550 offering. The duplication of COHE 6490 was offset by the lapse of COHE 6430 during the 2015 calendar year. The credit-hour equilibrium was maintained only because both courses were taught by the same instructor.

Step 3—Procedure for Changing the Program Requirements and Timeline of Completion

A university graduate program can make changes to its existing curriculum only with the approval of the university's graduate curriculum committee (GCC) and other institutional oversight bodies. Once that approval is obtained, the proposed changes are included in the next academic year's official catalog and implemented. For example, changes that are reviewed and approved during the 2016–2017 academic year would be included in the university's 2017–2018 graduate catalog. It is important for academic units at a university to be aware of the chronology of the academic program revision process when planning to make curricular changes to graduate programs. Although the procedures described herein reflect ECU's internal processes, they are by no means unique or protracted, and are thus generalizable to other institutions.

The initial step is to consult university policies pertaining to the actions one intends to perform. As set forth in ECU's GCC Curricular Actions Table (part of which is shown in [Table 1](#)), multiple steps were necessary for the undertaking to be successful. Revisions included the addition of new courses and removal of existing courses, designation of prerequisites, changes to the concentration names, and a course title change (see [Table 2](#)). As indicated, the procedure for changing the MS in HIIM degree program requirements involved intradepartmental as well as extradepartmental review and approval.

After the departmental faculty had agreed to the recommended changes to the MS in HIIM program, the appropriate graduate teaching faculty wrote the revision package and submitted it to the departmental academic affairs committee. Next, the package of proposed changes was

submitted for approval to the GCC within the college. After their endorsement was received, the package was sent to the university's GCC. It is important to obtain departmental as well as unit-level approval for a proposal package as quickly as possible (within a few weeks) to get the proposed changes into the review queue at the university level for a particular academic cycle. Otherwise, the changes might not be reviewed until the following academic year.

Regarding the actual timeline, we present the following as an example of what one might encounter.

At ECU, the approximate last date by which a proposed program change will be considered for inclusion in the university's catalog for the next academic year is March 15. However, the package must be electronically provided to the committee no later than March 1—the true deadline.

Regardless of when the proposal is submitted, the program director and other select persons appear before the committee to explain and answer any questions concerning the proposed program modifications. If the university GCC agrees with the proposal, then the changes will be implemented and scheduled to appear in the next iteration of the university graduate catalog upon approval by the faculty senate and chancellor (typically done in bulk at the end of the semester). In our case, the proposal was accepted during academic year 2014–2015 by all parties, with changes going into effect in the following academic catalog (2015–2016). If the proposal had been unsuccessful, it would have been sent back for revision, which would have pushed it back to the 2015–2016 academic year docket for potential inclusion in the 2016–2017 catalog.

Ongoing Modifications to the MS in HIIM Program

When the MS in HIIM program commenced in the fall of 2013, the undergraduate HIM program was discontinued. This strategic decision was not made lightly. The expectation was that there would be great interest in the RHIA concentration. The transition left a void in North Carolina because no other baccalaureate-level RHIA program existed in the state. Many faculty in two-year programs offering Registered Health Information Technician (RHIT)²⁷ certification eligibility voiced the concern that a barrier was erected to achieving RHIA certification in-state. Likewise, baccalaureate-prepared students simply seeking RHIA eligibility were put off by the thought of completing an entire master's program. In response to these concerns, the HIM Graduate Certificate program was established.

Although it is a step beyond the baccalaureate level, the graduate certificate program requires only eight courses (see [Figure 3](#)) to earn eligibility to sit for the RHIA examination (for students who meet the prerequisites and have earned a baccalaureate degree). This program constitutes half of the optimized HIM concentration in the MS in HIIM program. Therefore, once a student completes the certificate, he or she could apply to the HIM concentration in the MS in HIIM, transfer all coursework, and complete the degree in an additional 1 to 1.5 years. As an enticement to do so, those graduating from the certificate with a 3.5 GPA or higher will have the GRE/GMAT requirement waived. The same waiver is applied to the HI graduate certificate as well.

Since its inception in the fall of 2015, 37 students have enrolled in the certificate program. It is difficult to fully identify students' intent for enrollment. That is, students enter the certificate for one of three reasons:

1. for RHIA eligibility alone,
2. for RHIA eligibility with the possibility of continuing in the master's program, or
3. to bypass the GRE/GMAT requirement when applying to the HIM concentration in the master's program.

Thus, direct enrollment in the MS in HIIM program—specifically the HIM concentration—has been stagnant, but matriculation from certificate programs (i.e., HIM and HI) has risen. This trend is expected to continue. As a result, the HIM concentration has become redundant in definition and administration, and will therefore be ended.

The discontinuation of the HIM concentration results in the MS in HIIM curriculum map proposed in [Figure 4](#). A notable observation is the absence of biostatistics (BIOS 7021). This course was featured in the HIM concentration only and will no longer be necessary once the concentration is removed. Because it was an extradepartmental course, no accreditation competencies were applied to it. Thus, the loss of the course has no effect on our gap analysis.

Students who would have chosen the HIM concentration will instead be enrolled in the HIM graduate certificate and the proposed MS in HIIM program. The necessary courses can be found in [Figure 3](#) and [Figure 5](#). The effect of this transition on the number of SCH required for completion of the existing concentrations is as follows. For the HI concentration, the course load remains unchanged because the proposed MS is the same as the HI concentration. For the HIM concentration, combining the HIM certificate program and the proposed MS program (which includes the elimination of the biostatistics course) results in an unchanged course load.

The Return of the BS in HIM

The RHIA eligibility that our program offers is tied to the BS in HIM program. Although the program has been discontinued (i.e., no new enrollment is allowed), it still exists for accreditation purposes. CAHIIM has agreed to the arrangement, but the Southern Association of Colleges and Schools (our regional accreditor) has not. Thus, our department was given an ultimatum—revive the BS in HIM or terminate it entirely.

The MS advisory committee met to discuss the options. The first option was to abandon the BS in HIM and seek RHIA eligibility through accreditation of the MS in HIM program—an option that only recently became available.²⁸ While this arrangement would suit the needs of our master's students, we had several reservations. First, the curriculum was vastly different from the MS in HI, requiring a complete reanalysis and, most likely, alterations to existing courses and the development of new

courses. Second, it was unclear if the HIM graduate certificate would be covered under the accreditation of the MS in HIM program. Lastly, we still had a strong desire to serve the community at the baccalaureate level.

The second option was to resurrect the BS in HIM. This option presented several drawbacks of its own. First, a majority of the courses overlapped with the remaining baccalaureate program (BS in health services management). The BS in HSM is a highly sought-after and competitive degree. Students entering the BS in HIM program would reduce the number of admissions to the HSM program and could potentially decrease overall classroom performance if applicants to the BS in HIM program were ill prepared for the rigors of the curriculum. Second, five courses would have to be revived.

With strained resources, both options seemed daunting. However, the faculty ultimately decided and agreed to reinstate the BS in HIM. A committee was convened to address the concerns previously raised and to set a date for program commencement. Beginning in the fall of 2017, the BS in HIM program will officially offer courses.

Graduate enrollment will be closely monitored during the initial period of the BS in HIM offering. If necessary, the optimization committee will act in accordance with the steps outlined in this article. A slight drop in HIM graduate certificate enrollment is expected because many of our HSM students matriculate in the certificate program (having met all prerequisites by virtue of completing the degree). However, we expect that many of the BS in HIM students will proceed into the proposed MS in HIM program (see [Figure 4](#)) as internal demand for our graduate programs continues to climb.

Conclusion

The competitive academic environment, not unlike healthcare itself, is always in flux. Prudence demands program flexibility and a vigilant oversight committee. Since our MS in HIM program first began, the number of graduate programs in HI and/or HIM (accredited or otherwise) has significantly increased. Departments must continually monitor, assess, and adjust programs to ensure that they are both timely and successful. In this article, we described such a process for the MS in HIM at ECU.

Work began with market analysis and moved into a committee specifically charged with optimizing the three original options. This article details the administrative, programmatic, and sequencing outcomes of the committee's work, along with the institutional processes required to see the changes through to fruition. As a result of this process, the course load was decreased, courses were removed or replaced, and options were consolidated to provide the most current, relevant, and efficient program for our students. Lastly, this article discusses ongoing modifications to the degree, highlighting continued efforts to maximize student success. In the final installment of this three-part series, we will present the steps we took to achieve accreditation.

Ray Hales Hylock, PhD, is an assistant professor in the Department of Health Services and Information Management at East Carolina University in Greenville, NC.

Paul David Bell, PhD, RHIA, CTR, is a professor in the Department of Health Services and Information Management at East Carolina University in Greenville, NC.

Susie Tolar Harris, PhD, MBA, RHIA, CCS, FAHIMA, is an associate professor in the Department of Health Services and Information Management at East Carolina University in Greenville, NC.

James Anthony Woodward is a graduate assistant in the Department of Health Services and Information Management at East Carolina University in Greenville, NC.

Robert James Campbell, EdD, CPEHR, CPHIMS, is an associate professor in the Department of Health Services and Information Management at East Carolina University in Greenville, NC.

Notes

1. Harris, Susie Tolar, Paul David Bell, and James Anthony Woodward. "First Steps in Starting a Master of Science Program in Health Informatics and Information Management." *Educational Perspectives in Health Informatics and Information Management* (Winter 2016): 1–15. Available at <http://eduperspectives.ahima.org/firststeps/>.
2. American Health Information Management Association. "Registered Health Information Administrator (RHIA)." Available at <http://www.ahima.org/certification/RHIA> (accessed March 12, 2017).
3. Harris, Susie Tolar, Paul David Bell, and James Anthony Woodward. "First Steps in Starting a Master of Science Program in Health Informatics and Information Management."
4. Commission on Accreditation for Health Informatics and Information Management Education. "Welcome to CAHIIM." Available at <http://www.cahiim.org/> (accessed March 12, 2017).
5. Ibid.
6. American Health Information Management Association. "Certified Professional in Health Informatics (CPHI)." <http://www.ahima.org/certification/CPHI> (accessed March 12, 2017).
7. American Health Information Management Association. Graduate Health Informatics Task Force.
8. Gadd, Cynthia S., Jeffrey J. Williamson, Elaine B. Steen, and Douglas B. Fridsma. "Creating Advanced Health Informatics Certification." *Journal of the American Medical Informatics Association* 23, no. 4 (2016): 848–50.

9. Gadd, Cynthia S., Jeffrey J. Williamson, Elaine B. Steen, Katherine P. Andriole, Connie Delaney, Karl Gumpfer, Martin LaVenture, Doug Rosendale, Dean F. Sittig, Thankam Thyvalikakath, Peggy Turner, and Douglas B. Fridsma. "Eligibility Requirements for Advanced Health Informatics Certification." *Journal of the American Medical Informatics Association* 23, no. 4 (2016): 851–54.
10. US Bureau of Labor Statistics. "Occupational Outlook Handbook: 2016–17 Edition, Medical and Health Services Managers." Available at <https://www.bls.gov/ooh/management/medical-and-health-services-managers.htm> (accessed March 12, 2017).
11. Burning Glass Technologies. *Missed Opportunities? The Labor Market in Health Informatics, 2014*. Available at http://burning-glass.com/wp-content/uploads/BG-Health_Informatics_2014.pdf (accessed September 5, 2017).
12. Study.com. "Salary and Career Info for a Masters in Health Informatics." Available at http://study.com/articles/Salary_and_Career_Info_for_a_Masters_in_Health_Informatics.html (accessed March 12, 2017).
13. Health Informatics Degree Center. "Top 10 Master's in Health Informatics Online 2016-2017." September 2016. Available at <http://www.healthinformaticsdegrees.org/masters-in-health-informatics-online/> (accessed March 12, 2017).
14. Best Colleges. "25 Best Online Master's in Health Informatics Programs." 2017. Available at <http://www.bestcolleges.com/features/best-online-masters-in-health-informatics-programs/> (accessed September 5, 2017).
15. Center for Online Education. "Best Online Master's in Health Informatics Degree Programs." Available at <http://www.onlinecolleges.net/rankings/best-online-masters-health-informatics-degree-programs/> (accessed September 5, 2017).
16. Best College Reviews. "The 25 Best Online Masters in Healthcare Informatics Degree Programs." Available at <http://www.bestcollegereviews.org/top/online-masters-in-healthcare-informatics-degree-programs/> (accessed March 12, 2017).
17. Washington Monthly. "2016 College Guide and Rankings." Available at http://washingtonmonthly.com/college_guide (accessed March 12, 2017).
18. Educate to Career. "ETC College Rankings Index Results." Available at <https://www.jobsearchintelligence.com/etc/college-rankings-result.php> (accessed March 12, 2017).
19. Best Value Schools. "Top 15 Cheap Online Health Informatics Master's Degree Programs." Available at <http://www.bestvalueschools.com/cheap/online/masters-health-informatics-degree-programs/> (accessed September 5, 2017).

20. Health Care Administration Degree Programs. "30 Most Affordable Master's in Health Informatics Programs 2015." Available at <http://www.healthcare-administration-degree.net/about/affordable-masters-health-informatics-degree/> (accessed March 12, 2017).
21. Commission on Accreditation for Health Informatics and Information Management Education. "Welcome to CAHIIM."
22. American Health Information Management Association. "Certified Professional in Health Informatics (CPHI)."
23. American Health Information Management Association. Graduate Health Informatics Task Force.
24. Gadd, Cynthia S., Jeffrey J. Williamson, Elaine B. Steen, and Douglas B. Fridsma. "Creating Advanced Health Informatics Certification."
25. Gadd, Cynthia S., Jeffrey J. Williamson, Elaine B. Steen, Katherine P. Andriole, Connie Delaney, Karl Gumpfer, Martin LaVenture, Doug Rosendale, Dean F. Sittig, Thankam Thyvalikakath, Peggy Turner, and Douglas B. Fridsma. "Eligibility Requirements for Advanced Health Informatics Certification."
26. Harris, Susie Tolar, Paul David Bell, and James Anthony Woodward. "First Steps in Starting a Master of Science Program in Health Informatics and Information Management."
27. American Health Information Management Association. "Registered Health Information Technician (RHIT)." Available at <http://www.ahima.org/certification/RHIT> (accessed March 12, 2017).
28. American Health Information Management Association. "Registered Health Information Administrator (RHIA)."

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