NOTE: This handbook reflects current institutional and program information, including admissions criteria and curricula. Information is subject to change.

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MASTER OF HEALTHCARE ANALYTICS (MHA) PROGRAM

Purpose
The Master of Healthcare Analytics program is designed to equip students with practical learning experience through the application of analytics methods and strategies to solve real-life analytics problem. The goal is to prepare students for their future careers in healthcare analytics.

Mission
In the Master of Healthcare Analytics program, students will develop the skills to integrate, analyze and translate the results of healthcare data. The program is committed to promoting the use of information technology, statistical methods, and computer science to predict, improve, and transform healthcare.

Values
- Academic integrity is the foundation of higher education.
- The student-teacher relationship is based on mutual respect, trust, and a desire for shared learning experiences.
- Diversity in many forms will strengthen the learning environment.
- We are accountable and responsive to our constituents.

Goals
1. Equip professionals with sound understanding of data structures, database management systems, and software utilization in order to collect, validate, and manipulate health data (PG1)
2. Prepare professionals with quantitative and qualitative skills to produce knowledge-based solutions and foster discovery from health data (PG2)
3. Develop professional capacity to understand the American health data systems, communicate and work in diverse teams, and to become leaders in data science (PG3)
Student Learning Outcomes
Graduates of this program are professionals who:

- Understand the architecture and general management of health data (PG1)
- Are knowledgeable about ethical issues, confidentiality, privacy and security of health data (PG1)
- Apply programming languages and software to construct, extract, store, and manage health data (PG1)
- Design solid methods for health outcome studies and data collection (PG1)
- Understand principles of data representation and data analysis (PG2)
- Construct analysis plans using appropriate statistical methods and programming techniques (PG2)
- Apply advanced quantitative methods to improve integrated use of health data (PG2)
- Are able to understand, interpret, and communicate data analysis outcomes (PG2)
- Understand healthcare systems and how to optimize delivery of care based on analytics evidence (PG3)
- Possess communication and critical thinking skills to design, coordinate, and implement effective analytics strategies (PG3)
- Are capable of integrating components of data analytics into relevant real world challenges in healthcare organizations (PG3)
- Role model best practices of healthcare analytics leaders (PG3)

ACCREDITATION
Eastern Virginia Medical School is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award the Doctor of Medicine degree, master’s degrees, doctoral degrees, and certificates. Contact the Commission on Colleges at 1866 Southern Lane, Decatur, GA 30033-4097 or call 404-679-4500 for questions about the accreditation of Eastern Virginia Medical School.

KEY PROGRAM CONTACT INFORMATION
Administration of the MHA program is according to the policies established in the program handbook. Administrative oversight is provided by the Program Director, the Chairs of the Curriculum and Admissions Committee, the Dean for the School of Health Professions, and the program’s Administrative Support Coordinator.
**NAME** | **ADDRESS** | **PHONE** | **E-MAIL**
---|---|---|---
Tina Cunningham, PhD, Program Director, Associate Professor | Eastern Virginia Medical School
Lester Hall, Room 400 651 Colley Avenue, Norfolk, VA 23507 | 757-446-7186 | CunninTD@evms.edu

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**PROGRAM FACULTY**

Program faculty are certified in accordance with institutional policies and procedures.

<table>
<thead>
<tr>
<th>MHA Faculty</th>
</tr>
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</table>
| Tina Cunningham, PhD | Director - Healthcare Delivery Science Program
Director-Healthcare Analytics Program
Associate Professor |
| C. Donald Combs, PhD | Vice President & Dean - School of Health Professions |
| Brian Martin, PhD, MBA | Associate Dean - School of Health Professions
Director - Doctor of Health Sciences Program
Director- Master of Public Health Program |
| Mohan Pant, PhD, PStat (American Statistical Association) | Associate Professor, Health Analytics Program, School of Health Professions |
| Glenn Yap, PhD, MBA, MA | Associate Professor, School of Health Professions |
THE TECHNICAL STANDARDS

The essential abilities and skills that candidates and students must possess in order to complete the education and training associated with the MHA program are referred to as Technical Standards.

1.0 Observation Skills Technical Standard

1.01 Demonstrate sufficient attention and accuracy in observation skills (visual, auditory, and tactile) in the lecture hall, laboratory, and/or online settings. Indicators include but are not limited to accurate visualization and discrimination of text, numbers, patterns, graphic illustrations, and other imaging texts.

2.0 Communication Skills Technical Standard

2.01 Demonstrate effective communication skills with professionals of varying cultures, ethnicities, and personalities.

2.02 Indicators include, but are not limited to, these examples:

1. Clear, efficient, and intelligible articulation of spoken English language.
2. Legible, efficient, and intelligible written English language.
3. Accurate and efficient English language reading skills.
4. Accurate and efficient, expressive and receptive communication skills.
5. Ability to accurately follow directions (oral and written).

3.0 Critical Reasoning Skills Technical Standard

3.01 Demonstrate critical reasoning skills, including, but not limited to intellectual, conceptual, integrative and quantitative abilities.

3.02 Indicators include, but are not limited to, these examples:

1. Demonstrate ability to measure, calculate, reason, analyze, integrate, and synthesize information.
2. Demonstrate ability to acquire, retain, and apply new and learned information.
4.0 Motor and Sensory Function Technical Standard

4.01 Demonstrate sufficient motor and sensory function.

4.02 Indicators include, but are not limited to, these examples:

1. Execute motor movements that demonstrate safety and efficiency in the various learning settings (i.e., classroom, online).
2. Physical stamina sufficient to complete the online didactic study, which will include prolonged periods of sitting.

5.0 Behavioral and Social Attributes Technical Standard

5.01 Demonstrate the behavioral and social attributes vital to participation in a graduate-level academic program.

5.02 Indicators include, but are not limited to, these examples:

1. Possess the emotional health required for full utilization of mental faculties (judgment, orientation, affect, and cognition).
2. Ability to develop mature and effective professional relationships with faculty and other members of the educational and healthcare team.
3. Possess personal qualities that facilitate effective therapeutic interactions (compassion, empathy, integrity, honesty, benevolence, and confidentiality).
4. Demonstrate impartial motives, attitudes, and values in roles, functions, and relationships.
5. Ability to monitor and react appropriately to one’s own emotional needs and responses.
6. Display appropriate flexibility and adaptability in the face of stress or uncertainty in teaching and learning environments.
STUDENT IDENTIFICATION POLICY
Due to the fact that the MHA program is offered entirely online through Internet access, there is no need for distance learners to obtain a photo identification badge. However, students enrolled in the program who live near the EVMS campus have the option to obtain a photo identification badge in case they wish to visit the program office, library, etc. If students living in the Norfolk area wish to obtain a student ID badge, they must visit the Human Resources Department, located in Smith Rogers Hall between the hours of 8AM – 4PM Monday through Friday. While on campus, this badge must be worn prominently at all times for access to EVMS facilities.

REGISTRATION

Course Registration
Students will register for courses six weeks prior to the start of a new semester. This registration process will take place in the myEVMS portal by clicking on the VZ Registration link. Once the student has logged into the portal and clicks on the link, a registration page will display. Click all of the course boxes listed for the semester and press submit. A confirmation email will be sent to the student’s EVMS email account. The registration will follow with an invoice that will be sent by mail to the student.

STUDENT FINANCES
The EVMS Financial Services office will mail an invoice one month prior to the start of each semester. Your first invoice will include tuition and student fees less your acceptance deposit.

Payments
Tuition payments for the MHA program must be paid by the first day of each semester, based on the total number of credit hours for which a student has enrolled, and is subject to change at any time. Please contact the Financial Office at 757-446-6063 or by email at AR@EVMS.EDU if you do not receive a tuition invoice.
**Tuition Statements**

You can access your financial statements at any time online using the [myEVMS portal](https://myevms.evms.edu). If you have any questions or do not receive an invoice, please contact the Finance Office at 757-446-6063 or by email at [AR@EVMS.EDU](mailto:AR@EVMS.EDU).

**Financial Aid**

To qualify and maintain eligibility for Federal Student Aid programs, an applicant must be accepted for admission to EVMS, be enrolled in good standing at least half time, be a U.S. citizen or permanent resident, be registered with the Selective Service if a male, at least 18 years old, under 26 years old, and not currently a member of the Armed Forces, not be in default on a previous student loan or owe a refund on any Title IV funds received at another educational institution, maintain satisfactory academic progress and be credit worthy (for credit based loans). To be considered enrolled at least half time, students must be registered and attending at least (6) credit hours per semester. Failure to maintain enrollment in (6) credits per term could result in loan funds being returned to the Title IV granting agency and could result in a balance due to EVMS. Sources of financial aid can be confirmed by the EVMS Office of Financial Aid at 757-446-5804 or email at [finaid@EVMS.EDU](mailto:finaid@EVMS.EDU).

**Financial Aid and Academic Probation**

In order to continue to receive federal, state, and institutional financial aid, you must maintain satisfactory academic progress according to your program’s guidelines, but you must also meet the pace and completion requirements of the federal regulations. More information on the [Satisfactory Academic Progress requirements](https://myevms.evms.edu) is located online.

**Tuition Discount for Sentara Employees**

If you are employed by Eastern Virginia Medical School or Sentara you are eligible to receive a 10% tuition discount for this program. To receive the discount we must be able to verify your employment in advance of each semester, so please send an e-mail to Dr. Brian C. Martin and Kathleen Gabana confirming your request for the discount by July 1st (for the Fall term), November 1st (for the Spring term), and March 1st (for the Summer 2021 term).

**Attendance**

Once the semester begins, the students are notified of new course openings. It is a requirement for all MHA students to log into their new course(s) the first day of the course. Information about the course schedule, such as start and stop dates, is available in this handbook (see [Program Schedule](https://myevms.evms.edu)), the MHA Orientation Course, and the MHA Class Calendar. Failure to log in to a course and missing important deadlines may lead
to withdrawal from a course. Students should expect to commit 15-20 hours per week to each course. Attendance is evaluated by student participation in online discussions, required interaction with the faculty as well as other classmates, and the timely submission of class assignments. Completion of Day One activities is the means by which the Program verifies your presence and participation in each course. This information is reported to Financial Services to initiate Financial Aid disbursements.

ONLINE COURSE PROCEDURES

This section includes the Course Policies and Procedures that explain how different aspects of online courses are handled.

Examination Procedures

All examinations and quizzes are taken online, either within the Blackboard environment or using other software specified by the instructors. Students will be given detailed instructions at the time an exam is released about resources they may use during an exam. Written work will be checked for plagiarism electronically through the Blackboard environment using the Safe Assign feature.

Reviewing Secure Exams

Because of the secure nature of the exams you may take, they will not be released to you for review. Questions should be directed to the course instructor, and may require setting a time to meet in an Adobe Connect Meeting space.

Assignments

Deadlines for submitting assignments are included in each course syllabus. Due to the differing time zones, Eastern Standard Time (EST) will be used for exam postings or deadlines. Special circumstances should be approved by the course instructor at least a week in advance. Unless directed differently by the faculty, the assignments folder must be used for submission of all projects, reports, and papers—never email your assignments. Always submit your assignments in the format requested by the instructor. Always include your last name in the file name, and use a running footer that includes your name on every page.

Grades

Grades for assignments and exams are posted in the Blackboard course site within one week after the assessment or deadline. Also, within a one-week period after the end of a course and after the course survey or evaluation has been completed by all students, the
course grades will be posted. If you have not received a grade for an assignment, exam or course within a one-week period, please contact the course director to report the problem. If you do not get a response, contact the Program Director.

Course Surveys and Evaluations
We require all students to fill out an evaluation or survey for each and every course. Students will receive a link to the course survey during the last week of the course and will receive a reminder email about the survey weekly until we receive the survey. As soon as the Course Evaluation Surveys are complete, your grades are released. Responses to questions related to the course and faculty are anonymous and not shared with faculty until after final grades are submitted.

Instructor Response Time
Program faculty are expected to check messages once per day and respond within 48 hours. Feedback on assignments is usually provided within one week of receipt. If there are any concerns about missed emails or no response, please contact the course instructor or the Program Director.

Class Demeanor
Students are expected to interact in a professional manner with classmates, faculty, and staff, be prompt in attending Internet meetings, be patient in online interactions, and follow through on their individual contributions to group assignments. Inappropriate language, dissension, or disruption will be removed from any web posting and disciplinary action may be taken.

Email
Only your EVMS email will be used for the duration of the program. Email may be sent from within Blackboard, but Blackboard will use your EVMS email account as the sending account. Information that you need to convey to the instructor or requests for an appointment are best sent via EVMS email.
Communication within On-line Courses

The Discussion Board, Wiki, VoiceThread, and Blackboard Collaborate are types of interactions where students and faculty who have access to the class can communicate with one another. All of these types of assignments will typically have a grade associated with them. Please check to make sure you understand the timing of posts, how many posts, and the type and depth of the post being requested so that you may get full credit for the assignment.

Typically, each course has a general ungraded discussion board forum where you may ask for clarification of the course requirements. If you have a question related to something you read, chances are someone else in the class does also. If you post something and are not getting a reply, most likely no one is aware that you have posted a question. Please report this to the course director who will take appropriate action to notify others.

Please be aware of netiquette when making a post. Be respectful of each other and your faculty, avoid texting short hand or in all caps, and please behave in a professional manner.

Troubleshooting

If you cannot log into Blackboard (Bb) or access your email, please contact the Network Information Center (ACC) by phone at 757-446-5871 or by email at comphelp@EVMS.EDU.

GRADING POLICIES

Make-up Policy

If you are unable to meet the deadline for submission of assignments, you must communicate with the course instructor or course director. Failure to do this will result in a zero grade for the assignment.

Late Assignments

Assignments must be submitted on or before their due date. Technology failures, such as an EVMS/Blackboard server problem, are not excuses for late submission of work. If you are unable to connect to the server, please contact the Network Information Center.
immediately to troubleshoot the issue and email the faculty to determine where to send a copy of the assignment.

Student Progress

Student progress in the MHA program is monitored at the individual course and semester levels. The course director evaluates progress at the course level during and at the end of a course. If student performance falls below a level that is acceptable, the course director will issue a written warning, which is sent to the Program Director as well as the student. This warning should alert the student to problems to remedy immediately. Once a student is issued a warning, they must contact the Program Director to discuss ways to remedy the situation. Communication between the course director, Program Director, and the student is established to discuss options. The Program Director will meet in the middle and at the end of each semester with individual course directors as needed to evaluate student progress at the course level. At the end of the semester, the student GPA is evaluated by the Program Director. Since the students in the MHA program will be required to achieve a cumulative GPA of 3.00 or better to obtain a graduate degree, this standard must be met each semester.

Academic Standing, Warning and Probation

1. Students are considered to be in good academic standing if their term and cumulative GPA is 3.00 or greater.
2. If a student’s term or cumulative GPA falls below 3.00, a written warning is issued. Students who receive a warning must increase their cumulative GPA to 3.00 or higher by completion of the following semester or they will be placed on academic probation.
3. Students placed on academic probation must achieve a term GPA of 3.00 or higher by the completion of the following semester or they will be subject to dismissal. Students on probation who achieve a term GPA of 3.00 or higher, but whose cumulative GPA is below 3.00, may remain on probation for one additional semester.
4. No student may remain on probation for more than two consecutive semesters. Any student who fails to attain a cumulative GPA of 3.00 or higher after two semesters of probation will be subject to dismissal from the program.
5. Students receiving a grade of C- or below in any course may be asked to retake the course or part of the course based on a decision by the course and program directors. Most courses are taught only once a year, which may mean taking the course or a part of the course with the following cohort of students.
6. Any student receiving the grade of a C- in two courses is subject to dismissal from the program.
7. The Program will make every reasonable effort to notify students of their academic status. A letter is mailed to each student placed on academic warning, probation,
or dismissal. However, it is the responsibility of every student to monitor their academic progress and to check with the Program Director if there are any questions about his or her academic status.

*Eligibility to receive financial aid may be affected if a student is placed on academic probation.*

**Student Disability Service Statement**

EVMS is dedicated to providing reasonable accommodations to qualified students with a documented disability. The student must self-identify with the Office of Student Disability Services as having a disability to begin the accommodation process. It is in the best interest of the student to begin the accommodation process as soon as you are aware that you may need them, as accommodations are not retroactive. All students must be able to fulfill the academic and technical standards of their academic program with or without reasonable accommodations; however accommodations are made available to aid in fulfilling those standards, not to waive them. If you have, or believe you have, a disability for which you wish to request accommodations under the Americans with Disabilities Act or Section 504 of the Rehabilitation Act, you must contact the EVMS Disability Officer—[StudentDisability@EVMS.EDU](mailto:StudentDisability@EVMS.EDU). For more information about the disability accommodations process, please visit: [Disability Guide for Students](#)
PROFESSIONALISM AND SCHOLARLY REQUIREMENTS

Writing Style
The MHA program uses the 6th edition of the American Psychological Association (APA) Manual of style formatting and citation for all assignments. If you have a question about formatting that you need help with that is not covered elsewhere, please consult the APA Style Guide, 6th Edition.

The EVMS Honor System
The students, faculty, and administration of EVMS join together in support of the EVMS Honor Code for the purposes of (a) providing an atmosphere of mutual trust, concern, and respect; (b) fostering honorable and ethical behavior; and (c) cultivating lifelong professional conduct.

Any action indicating lack of integrity or dishonesty in academic matters is considered a violation of academic ethics and the Honor Code. Such offenses include, but are not limited to, lying, stealing, engaging in or attempting to engage in cheating, plagiarism, sabotage, falsifying or manipulating data, or knowingly passing off work of another as one’s own. Any student who fails to abide by the Honor Code or live up to its principles is subject to disciplinary action by the Honor Court. All students are obligated to support the Honor Code and report any violation thereof to the Honor Council. Each student subscribes to the Honor Code by signing in writing his/her support at the time of matriculation.

Plagiarism Policy
Plagiarism can best be defined as stealing and passing off the ideas and/or exact words of another as your own. Unintentional plagiarism, where the plagiarism is the result of ignorance, poor writing skills, or mistakes in writing up citations in early drafts, is forgivable.

Basically, if you submit a final draft to an instructor or to a journal for publication with the words or ideas of another person consciously copied with or without citation, then you are guilty of plagiarism.

Thus, students in this program are trained to:
• Understand proper ways to cite and use material from others’ work
• Know the differences between citation, quotation, and plagiarism

Written work will be reviewed to detect plagiarism using the Safe Assign feature in Blackboard and other methods as necessary.
GRADUATION REQUIREMENTS

Length of Time to Complete the Master’s Degree

It is expected that full-time students in the MHA program will complete their requirements in two (2) calendar years. If the student has not completed the degree requirements at the end of the second year period and they anticipate non-completion by the 90-day post-graduation cutoff, the student must submit a written plan for completion of the outstanding requirements which is due by the third week in May of their graduation year and the Program Director must approve this petition. Financial aid could be impacted by failure to complete the degree in a timely manner. Students must pass all courses and achieve a cumulative GPA of 3.00 or higher to graduate.

Graduation

EVMS confers formal academic degrees at an annual graduation ceremony to students in degree granting programs. All candidates for academic degrees, who qualify during a given academic year, will be graduated at this ceremony regardless of the actual completion date of the degree requirements. Students may participate in commencements while still completing requirements; however, they will be presented with an empty diploma folder during the ceremony. The diploma will be sent after all degree requirements are completed. In order to participate in graduation, all degree requirements must be completed within 90 days after the date of graduation. The program director, practicum advisor, and/or Student Progress Committee must see that all requirements have been completed or that adequate progress has been made (including the Practicum project) one month prior to graduation or the student will not be approved to attend commencement (complete Certification for Graduation). The student must petition for approval to attend graduation one month prior if all requirements have not been met (complete Requirements Have Not Been Met Form).

The ceremony is conducted on the third Saturday in May. Caps and gowns for distance learning students are distributed on the day of graduation at Scope Auditorium in Norfolk, Virginia. A line-up sheet will also be given to inform graduates of the order of procession. Assistance will be provided for any questions or concerns.

Commencement exercises are part of a larger academic tradition. Commercial activity is incompatible with these exercises. Such activities are appropriately conducted during the rehearsal or at class banquets. Any public displays of graduation information and events must be approved by both the Chief Marshal and the Office of Institutional Advancement.
EVMS Student Publishing Policy

Authorization for publishing any or all of your practicum project as a meeting abstract, meeting poster, book chapter, or article in a scientific journal must be sought from your advisor(s) and the Program Director. All scholarly work done as part of the requirements of completing the MHA program must be attributed to EVMS, your advisor, the Program Director, and your local institution.

CURRICULUM

The 30-credit hour distance-learning program is designed to be completed in five consecutive semesters. Courses are expected to be offered in either a 16-week or 8-week format.

Core Courses
MHA 500: Introduction to Healthcare Analytics
MHA 501: Programming Tools and Techniques in Data Management
MHA 502: Research Methods
MHA 504: Predictive Data Analytics
MHA 505: Healthcare Delivery System
MHA 506: Data Mining and Machine Learning
MHA 511: Practicum Project
MHA 512: Applied Statistical Analysis
MHA 513: Data Visualization

Electives:
MHA 509: Leadership and Professionalism
MHA 510: Population Health and Preventive Care

Students complete coursework and interact with instructors and classmates through a distance education format utilizing the Blackboard (Bb) Learning Management System. Upon successful completion of the program, students are awarded the MHA degree.
COURSE DESCRIPTIONS

Introduction to Healthcare Analytics
The course introduces basic concepts in healthcare analytics. Students will develop data analysis skills with an emphasis on statistical reasoning. The course is designed to teach students how to use data to make informed decisions. This process includes reviewing the data, exploring all the underlying assumptions, summarizing and analyzing the data, and finally translating the results. Discussions and assignments will focus on honing data interpretation and the ability to strategically apply analysis results to improve health outcomes.

Programming Tools and Techniques in Data Management
This course is designed to train students in basic and advanced statistical programming languages (such as SAS or R) together with techniques and tools necessary for data management and data mining. Students will develop skills in the data management process for analytics including data acquisition, cleansing, and debugging. Students will be able to relate and aggregate these data in analytic databases, data marts, and data warehouses, and will be able to explore different analytical decision tools through case studies and projects.

Research Methods
This course introduces research methods in a healthcare setting. Students will be able to learn about development of research questionnaire and design, methodology, data collection and sampling techniques, sample size and power analysis, research ethics and validation, and effective dissemination of research. Students will be able to explore and evaluate different types of research procedures and outcomes in the healthcare sector.

Predictive Data Analytics
This course focuses on statistical inference and hypothesis testing methods in predictive analytics. Students will learn the application of statistical methods for analyzing both continuous and discrete data for knowledge discovery. Analytic continuous and discrete data concepts and methods are developed with practical skills in exploratory data analysis. Descriptive statistics, goodness-of-fit tests, correlation measures, single and multiple linear regression, analysis of variance and covariance (ANOVA and ANCOVA), contingency tables, logistic regression, multinomial, and multivariate models will be covered. Application of various statistical methods using case studies and real-world data will leverage statistical assessment and interpretation.
Healthcare Delivery Systems

This course focuses on the identification and analysis of factors and interrelationships which influence the operation of health services organizations, with specific attention to local health departments, hospitals, multi-institutional systems, integrated health systems, and strategic alliances. These organizations will be viewed and discussed comparatively with other types of health service agencies.

Data Mining and Machine Learning

This course covers healthcare analytics using data mining and machine learning techniques. Statistical software, such as SAS or R, will be implemented for data exploration and visualization, classification, clustering, and time series analysis. Decision trees, nearest neighbor algorithm, Bayesian analysis, neural network, genetic algorithm, and support vector machine methods will be introduced to the students. Case studies and real-world data will leverage students’ data mining and machine learning outcomes.

Electives

Students will choose one of the following courses on their individual career goals:

- **Leadership and Professionalism**
  
  This course will expose learners to effective leadership approaches and skill sets. Topics will include fundamentals of leadership, leadership and professionalism self-assessment, leadership philosophy, professionalism, essential leadership and professional skills, modeling best leadership practices and behaviors, ethics in leadership, institutional and program accreditation, handling conflict, and emerging issues. Learners will apply this learning to their professional life through a series of practical exercises.

- **Population Health and Preventive Care**

  This course discusses the determinants of health, health behavior change, measuring health status, and influences on health status including health disparities and socioeconomic status. This includes discussion on how healthcare organizations utilize this information to improve health status among populations. Additionally, students will be able to identify and understand population-based approaches aimed at health improvement.
Practicum Project
The practicum is designed to demonstrate the student’s accumulated learning experience through an approved healthcare analytics project. The goal of the practicum is to provide students with the opportunity to apply academic theory and acquired technical skills to community-based healthcare research and service in a practice setting. The completed product should bring together the student’s technical competency, communication skills, and research capabilities. The practicum project will be guided by the faculty.

Applied Statistical Analysis
This course provides students with the skills and knowledge to apply basic statistical methods in the field of healthcare analytics. The course covers commonly used descriptive and inferential statistical methods applied to discrete and continuous random variables. Examples from the field of healthcare will be utilized to illustrate these concepts in applied settings. Students will use the statistical software package R, a free software for statistical computing and graphics throughout the course.

Data Visualization
This course is intended to be a step-by-step introduction to the world of visual analytics and is designed for the beginner and intermediate users of data visualization. The course will help students to understand and apply important concepts and techniques in data visualization, moving from simple to complex situations and then combine them in interactive dashboards. Topics to be covered include data connection, different graphs and charts, quick table calculations, designing interactive dashboards, mapping, unions and joins.
CERTIFICATION FOR GRADUATION
Master of Healthcare Analytics (MHA) Program

This form will be completed and submitted by the Program Administrator. After student evaluation and signature are obtained, the student will be allowed to graduate.

Student Name: _____________________            ____________________       ___________
Last Name                                    First Name                         Middle Initial
Student ID #: _______________________           Entry Year: _______________________

Please indicate the status of the following:

<table>
<thead>
<tr>
<th></th>
<th>Pending</th>
<th>Completed</th>
<th>Not Applicable</th>
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</thead>
<tbody>
<tr>
<td>Presentation</td>
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<tr>
<td>Final GPA</td>
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<tr>
<td>Total credits needed (30)</td>
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Please check all of the required courses that must be completed prior to graduation:

<table>
<thead>
<tr>
<th></th>
<th>Course No.</th>
<th>Course Name</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td></td>
<td>MHA 500</td>
<td>Introduction to Healthcare Analytics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MHA 501</td>
<td>Programming Tools and Techniques in Data Management</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MHA 502</td>
<td>Research Methods</td>
<td>3</td>
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<tr>
<td></td>
<td>MHA 504</td>
<td>Predictive Data Analytics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MHA 505</td>
<td>Healthcare Delivery Systems</td>
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<tr>
<td></td>
<td>MHA 506</td>
<td>Data Mining and Machine Learning</td>
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<tr>
<td></td>
<td>MHA 509</td>
<td>Leadership and Professionalism</td>
<td>3</td>
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<tr>
<td></td>
<td>MHA 510</td>
<td>Population Health and Preventive Care</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MHA 511</td>
<td>Practicum Project</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>MHA 512</td>
<td>Applied Statistical Analysis</td>
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</tr>
<tr>
<td></td>
<td>MHA 513</td>
<td>Data Visualization</td>
<td>3</td>
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Upon completion of the above, this student will have completed all requirements for the Master’s degree.

Program Director                          Date
REQUIREMENTS HAVE NOT BEEN MET FORM

Petition to Attend Graduation or Graduate with Your Cohort
Master of Healthcare Analytics (MHA) Program

This form must be completed and returned one month prior to graduation (the third week in April). This form is required by students who have not completed all degree requirements but would like to attend graduation or would like to officially graduate in the academic year under which you entered the program (e.g. Class of 2021). Students must email the completed form for review by the Program Director. Any outstanding requirements must be completed within approximately 90 days from the date of the graduation ceremony.

<table>
<thead>
<tr>
<th>Student Name</th>
<th>Student ID #</th>
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</thead>
<tbody>
<tr>
<td>Student Signature</td>
<td>Date</td>
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List of Requirements Not Met

SIGNATURES

<table>
<thead>
<tr>
<th>Advisor</th>
<th>Date</th>
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<tbody>
<tr>
<td>Course Director</td>
<td>Date</td>
</tr>
<tr>
<td>Program Director</td>
<td>Date</td>
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## CURRICULUM (SNAPSHOT OF COURSES AND SEQUENCE)
### Master of Healthcare Analytics (MHA) Program

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>YEAR ONE</th>
</tr>
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<tbody>
<tr>
<td>MHA 500</td>
<td>Introduction to Healthcare Analytics</td>
</tr>
<tr>
<td>MHA 501</td>
<td>Programming Tools and Techniques in Data Management</td>
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<tr>
<td>MHA 505</td>
<td>Healthcare Delivery Systems</td>
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<table>
<thead>
<tr>
<th>Semester 2</th>
<th>YEAR ONE</th>
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<tbody>
<tr>
<td>MHA 502</td>
<td>Research Methods</td>
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<tr>
<td>MHA 512</td>
<td>Applied Statistical Analysis</td>
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<td>MHA 513</td>
<td>Data Visualization</td>
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<td>Credit Hours</td>
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<table>
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<tbody>
<tr>
<td>MHA 504</td>
<td>Predictive Data Analytics</td>
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<tr>
<td>MHA 509</td>
<td>Leadership &amp; Professionalism</td>
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<tr>
<td>Or MHA 510</td>
<td>Population Health and Preventive Care</td>
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<td></td>
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<table>
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<tr>
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<th>YEAR TWO</th>
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<tbody>
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<td>Data Mining and Machine Learning</td>
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<tr>
<td>MHA 511</td>
<td>Practicum Project</td>
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<td>Total Credit Hours</td>
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<tr>
<td></td>
<td>Class of 2021</td>
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<tr>
<td><strong>Orientation</strong></td>
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<tr>
<td><strong>Term I</strong></td>
<td><strong>Semester 4</strong></td>
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<tr>
<td>Start Date</td>
<td>8/24/2020</td>
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<tr>
<td>End Date</td>
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<td><strong>Term II</strong></td>
<td><strong>Semester 2</strong></td>
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<tr>
<td>Start Date</td>
<td>1/11/2021</td>
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<tr>
<td>End Date</td>
<td>4/30/2021</td>
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<tr>
<td><strong>Term III</strong></td>
<td><strong>Semester 3</strong></td>
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<tr>
<td>Start Date</td>
<td>5/10/2021</td>
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<tr>
<td>End Date</td>
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<td>Final Exams</td>
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<td>5/15/2021</td>
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<td><strong>HOLIDAYS AND BREAKS</strong></td>
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<tr>
<td>Labor Day</td>
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<td>Winter Break</td>
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<td>1/18/2021</td>
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<td>Memorial Day</td>
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<td>Fourth of July</td>
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