BUSINESS ANALYTICS

Graduate Program Head  
Kevin Linderman

Program Code  
BAN

Campus(es)  
University Park (M.B.An.)

Degrees Conferred  
Master of Business Analytics (M.B.An.)

The Graduate Faculty  
View (https://secure.gradsch.psu.edu/gpms/?searchType=fac&prog=BAN)

The Master’s in Business Analytics program focuses on developing the business analytics skills of professionals entering and engaged in business, non-business, and STEM career fields. Advances in technology have greatly enhanced the ability of organizations to capture large sets of structured and unstructured data; however, society’s ability to organize, prepare, analyze, and exploit such data has not kept pace with these developments. Companies, governments, and nongovernmental organizations now seek qualified employees who can apply mathematics, statistics, computer science, and operations research techniques to small and large data sets to develop insights that will enhance business decision-making capabilities.

In order to develop highly-skilled business analysts capable of supporting data-driven business decisions, the M.B.An. program is built upon the widely-recognized progression of analytics development: descriptive, predictive, and prescriptive analytics. Through descriptive analytics (i.e., “What has happened?”), students develop skills in acquiring, organizing, cleaning, visualizing, and analyzing data from a wide range of business and non-business scenarios to help organizations understand their current operations. Advancing to predictive analytics (i.e., “What will happen?”), students use cutting-edge techniques (e.g., data mining) to detect patterns in data and project future outcomes based on past events. The M.B.An. program culminates with students learning predictive analytics (i.e., “What should happen?”) skills, where students practice advanced analytics techniques such as simulation and optimization to help develop the best data-driven courses of action for complex business problems. Throughout the program, the curriculum requires students to apply theories, quantitative techniques, and academic research while thinking critically to solve “real” business problems. Group and individual assignments will challenge students to analyze case studies, build models, and communicate their solutions in both written and verbal form.

Admission Requirements

Applicants apply for admission to the program via the Graduate School application for admission (http://gradschool.psu.edu/prospective-students/how-to-apply/). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (http://gradschool.psu.edu/graduate-education-policies/).

The student cohort reflects today’s international business environment, with selective admittance. With this in mind, the following are the admission requirements:

- Submission of a completed online Graduate School Application for Admission (http://gradschool.psu.edu/prospective-students/how-to-apply/) (including nonrefundable application fee).
- Official transcripts from all post-secondary institutions attended (http://www.gradschool.psu.edu/prospective-students/how-to-apply/new-applicants/requirements-for-graduate-admission/).
- GMAT or GRE results. Candidates who have demonstrated a strong academic background may apply for a GMAT/GRE waiver.
- Résumé reflecting professional experience related to analytics, including internships and co-op experiences.
- Statement of Purpose: a 600-word essay articulating career and educational goals that demonstrate strong written communication skills.
- Two letters of recommendation indicating applicant’s preparedness for graduate study.
- Visa Application (International Candidates).
- Official English Language Proficiency Exam Scores (International Candidates).

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. See GCAC-305 Admission Requirements for International Students (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-305-admission-requirements-international-students/) for more information.

Applicants who are still completing their baccalaureate requirements at the time of application may be provisionally admitted to the Graduate School, pending the award of the baccalaureate degree; refer to GCAC-303 Provisional Admission (http://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-303-provisional-admission/).

Degree Requirements

Master of Business Analytics (M.B.An.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (http://gradschool.psu.edu/graduate-education-policies/).

Total credits required for the Master’s in Business Analytics program is 30 credits at the 500- or 800-level, with at least 6 credits at the 500-level. One two- or three-credit elective course is required; this course may be at the 500- or 800-level.

There are 30 specified credits comprised of the following courses:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAN 830</td>
<td>Descriptive Analytics for Business</td>
<td>3</td>
</tr>
<tr>
<td>BAN 831</td>
<td>Business Data Visualization for Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>BAN 832</td>
<td>Programming Skills for Business Analytics</td>
<td>3</td>
</tr>
<tr>
<td>BA 840</td>
<td>Business Data Management</td>
<td>3</td>
</tr>
<tr>
<td>BAN 840</td>
<td>Predictive Analytics for Business</td>
<td>3</td>
</tr>
<tr>
<td>BAN 541</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>BA 804</td>
<td>Ethical Leadership</td>
<td>2</td>
</tr>
<tr>
<td>BA 817</td>
<td>Communication Skills for Management</td>
<td>2</td>
</tr>
<tr>
<td>BAN 550</td>
<td>Prescriptive Analytics for Business</td>
<td>3</td>
</tr>
</tbody>
</table>

Electives 2-3

Elective courses can be chosen from a list of approved courses maintained by the graduate program office. The list of elective courses may change over time based on feedback from students and industry.

Culminating Experience
Learning Outcomes

The Master’s in Business Analytics program Learning Goals and Objectives include:

1. **Broad Core of Analytics Knowledge**
   M.B.An. graduates will master a broad core of analytics knowledge and be able to integrate and apply this knowledge to business situations as corporate managers and strategic partners in industries requiring interdisciplinary skills and global perspectives.

   Learning Objectives:
   - M.B.An. graduates will demonstrate advanced competency in the underlying concepts, theory, and tools taught in core business analytics programs.
   - M.B.An. graduates will be prepared to apply their knowledge of descriptive, predictive, and prescriptive analytics to identify, analyze, and recommend solutions to complex corporate strategic problems and projects requiring interdisciplinary and global perspectives.

   Assessment Method: Course-embedded measure (BAN 830, BAN 540, BAN 550, BAN 888)

2. **Analytical and Critical Thinking Skills**
   MBAN graduates will develop analytical and critical thinking skills needed to excel in today’s business environment.

   Learning Objectives:
   - M.B.An. graduates will acquire the analytical and critical thinking skills needed to identify, analyze, and evaluate alternative solutions to problems and projects facing today’s corporate managers and strategic planners.
   - M.B.An. graduates will develop the skills needed to craft and implement unique and “cutting edge” strategic and tactical plans.
   - M.B.An. graduates will be able to articulate and defend their analyses and recommended solutions to multiple audiences from business, government, and the community.
   - M.B.An. graduates will be able to integrate findings and analyses from cutting edge academic and practitioner research to problems and projects confronting corporate America.

   Assessment Method: Course-embedded measures (All core courses.)

3. **Interpersonal Skills**
   M.B.An. graduates will possess the interpersonal skills needed to impress hiring managers and become effective corporate managers and leaders.

   Learning Objectives:
   - M.B.An. graduates will be skilled at leadership, team building, interpersonal influence, and the management of change.
   - M.B.An. graduates will be able to communicate and work effectively with others in work settings involving cultural and demographic diversity.
   - M.B.An. graduates will become natural team leaders with the unique ability to identify and limit the phenomenon of “group think” that often plagues underperforming corporations. Graduates will draw out the high potential from their team members, leveraging the team’s ability to analyze problems from many points of reference.

   Assessment Method: Course-embedded measure (BA 817, BAN 888)
4. **Value System**

MBAN graduates will be able to evaluate the ethical and societal implications of the corporate strategic decision-making for which they are involved and responsible.

Learning Objectives:

- M.B.An. graduates will be skilled at evaluating the impact of various courses of action on multiple stakeholders, including investors, lenders, customers, and the broader community.

Assessment Method: Course-embedded measure (BA 804, BAN 888)

These learning outcomes will be achieved by a combination of lectures by faculty and invited guest lecturers, reading of key literature, individual and team projects, and practical involvement in a business analytics capstone experience.

**Contact**

**Campus**

University Park

**Graduate Program Head**

Kevin Linderman

**Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)**

Chris James Solo

**Program Contact**

Andrea Lyn Murphy-Faust

220 Business Building

University Park PA 16802

alm205@psu.edu

(814) 863-0474

**Program Website**

View (https://mban.smeal.psu.edu/)