

MASTER SYLLABUS

QANT300: PRODUCTION AND OPERATIONS MANAGEMENT

1. Course Details

Semester:	
Course Code:	QANT300
Course Name:	Production and Operations Management
Course Prerequisites:	MGMT200, QANT201
Course Co-requisites:	None
Credits Hours:	Three (3) credit hours
Classroom:	
Class Timing:	(45 contact hours)
Final Exam Period:	

2. Instructor Details

Professor:
Office Location:
Office Hours:
Email:
Course website:
Phone (Office):

3. Catalog Course Description

Addresses activities required in the process of production of products and delivery of services. Background of concepts, processes and institutions in the production of goods and services will be covered. Computer applications are an integral part of this course.

4. Course Overview

This course will present the student with an introduction to the scope of operations problems that are common within industry. Problems will include those solved under certainty (e.g. facility layout and location) as well as under risk (quality control and probabilistic inventory). The topics will range from purely descriptive to mathematically rigorous. Students will also survey and learn about trends and innovations in operations, and the impact of these trends on a global society.

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5. Course-Level Learning Goals¹

(A) Invariant Learning Goals (In support of the BSBA Programmatic Learning Goal(s)):

Upon the successful completion of this course, the student will be able to:

1. Make operational decisions (e.g. inventory, facility location, scheduling) (A4);
2. Develop Project Management plans (A3; B1);
3. Research and discuss international and current operations issues (A2a);
4. Evaluate trends in operations-related innovations (A2b);
5. Apply software to solve operational problems (A1; A5);
6. Discuss the results of operations analysis effectively (A1; A3; B1); and
7. Integrate functional areas together the operations function (A4).

Assurance of Learning Validations (Linked to the BSBA Programmatic Learning Goal(s))²:

A1. Case Study Presentation: Student teams must prepare an end of chapter case. Each team of approximately five students will lead their case discussion during the final week of class. The leading team should prepare the case, necessary slides, charts and analysis. All class members are expected to participate in case discussion. The group grade for the case study is based on five group scores. The criteria for the first group score is the student team's ability to articulate clearly the key issues of the case and their solutions (G1O1). The criteria for the second score is the clarity of the presentation and the level of engagement of the audience, which the team must encourage (G1O2). For the third score a confidential evaluation of each team member will be conducted (G1O3). The criterion for this score is the degree to which the teammates evaluate contributions made by each of the group members. The criteria for the fourth score (M2O2) is the appropriate choice and use of software, either that found in the text or Excel-based, and the team's ability

¹ A note on School of Management Course-Level Learning Goals: Learning goals are partitioned into those that are in support of the programmatic learning goals (Invariant), specific to the localized region of delivery (Contextualized), and specific to the domain expertise of the instructor (Instructor-Specific). The former two categories are required for all courses. Invariant "Assurance of Learning Validations" are specifically linked to the associated programmatic learning goal and objective, with course-level learning goals representing the programmatic goal as it applies to the context of the course. Learning goals that focus on knowledge acquisition (Bloom's Taxonomy) are not specifically or necessarily included into the course-level learning goals, although it is assumed that knowledge acquisition of all relevant business core fundamentals is addressed within each course. Examinations in class are used to provide feedback concerning knowledge and comprehension for the purpose of ensuring that students who have not mastered these will not advance through the curriculum. Attainment of knowledge within each core area is assessed by way of standalone testing of each student as a required part of the instructional program prior to graduation (e.g. ETS).

² A note on School of Management Assurance of Learning Scoring: Scores form the metric for the degree to which the validation (e.g. learning outcome) satisfies the associated learning goal or objective. Assurance of learning validation descriptions identify the criteria for each score that is to be given. Scores are scaled using programs or concentration rubrics. It must be noted that scores are to be differentiated from grades. Scores form a criterion from which an instructor will ascertain an overall grade for any instrument of assessment, and the overall assessment the student receives for an instrument is a "grade." A score is an extraction that specifically measures the degree of attainment of a learning goal and/or objective.

to implement that software correctly in solving the case. The criteria for the fifth score (M2O4) is the visual appeal, readability and appropriateness of the PowerPoint slides used in support of the oral presentation.

A2. Business Research Homework: Two homework assignments are completed by each student:

- a. Each student will choose an operations topic that is currently in the news in a foreign country (e.g. oil production; pollution control), review the current business literature on that topic, and submit a written report. The report should discuss the topic in the context of the country chosen and the operational policies that impact globally on society. Two scores are given. The first is based on the relevancy of the topic to the country of interest (G3O1); and the second is based on the ability to identify appropriate impacts on multiple global societies (G3O2).
- b. Each student must survey the operations discipline for future innovations. The student must submit a three page paper that discusses the historical perspectives and current state of the issue (e.g. digital distribution of music; high speed rail transportation), the alternative future innovations that are under consideration, and the potential impact that the innovation might have in the discipline and society. Two scores are given. The first is based on the quality of the research into the historical, current, and future states of the industry/operation (M3O1); the second is based on the student identification of innovations and the evaluation of their impacts (M3O2).

A3. Student Project: Each student should be assigned to one of two projects, below:

- a. Project Management: The student should identify a typical operations multi-stage project, collect information on the project flow from a public source, and develop the appropriate project management analysis and flowchart, including the identification of critical activities, the impact of uncertainty of activity times, and the appropriate allocation of additional manpower capacity. The written project report by each student will be graded by the instructor.
- b. Time Series Project: Each student will be required to collect data about a company' stock and forecast price using Moving Average, Exponential Smoothing, and Naïve Methods. The goal of this project will be to select the method which leads to the lowest MAD, MSE, or MAPE. The student should be encouraged to use different parameters which lead to the best results, and present those in the final project report. The written Time Series project by each student will be graded by the instructor. For each project four scores are given. The criteria for the first score (M2O1) is the quality and appropriateness of the data. The criteria for the second score (M2O2) is the use of correct Excel formulas/tools to forecast and evaluate the measures of performance, or build the flowchart and conduct the requested analysis. The criteria for the third score (M2O4) is the ability of the student to present the data professionally in the report. The fourth score (M4O1) is based on the student ability to support the usefulness of the project outcome in formulating organizational/business* plans.

*This articulation of scoring criteria is included to facilitate student achievement of M4O1.

A4. Problem on a Quiz: Each student must demonstrate the ability to solve and find solutions to a mathematical production and operations management problem. A total of five quizzes will be conducted.

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One score is given to each student on each quiz based on the appropriateness of the mathematical analysis (M1O2). Specific problems for the quiz should be based on:

- Develop a demand forecast;
- Choose a facility location;
- Just-in Time;
- Develop a safety stock policy (integrating statistics);
- Schedule jobs according to various criteria (e.g. minimum mean wait time); and
- Construct a quality control chart.

A5. Graded Homework Problems: Each student is required to submit three homework assignments. The three topics are facility layout and design, inventory management or aggregate planning, and quality assurance. One score is given based on the ability to solve, using appropriate technology and software, the problem presented, and also identify field-specific software packages that are available to solve large-scale problems in the area (M2O2).

(B) Contextualized (Globalized) Learning Goal(s):

Upon the successful completion of this course, the student will be able to:

- Analyze and justify alternative trends for forecast data of firms in a common sector that trade in alternative international markets.

Assurance of Learning Validation (In support of the Contextualized (Globalized) Learning Goal(s)):

B1. Student Project: Students will consider at least two additional companies to that chosen in A3, and conduct the same analysis as specified in A3. A comparative analysis between all of the companies will then be performed and analysis of the factors that might influence why the chosen company forecasts are different by relating the trends to socio-economic or global market factors that are relevant and supported by the business press. One score will be given based on the ability to justify relevant factors from the business press that might support why companies in a common sector in different markets, display different forecast trends (G3O1).

(C) Instructor Specific Learning Goal(s) (Optional):

None

Assurance of Learning Validation (In support of the Instructor Specific Learning Goal(s)):

None

6. Teaching and Learning Methodology

The School of Management's teaching and learning strategy is informed by contemporary indicators/sources that derive from its target market, specifically the millennial generation. In particular, behavioral traits for this generation are identified and form the basis of emphasis for the schools' teaching and learning methodologies. These methodologies are reflected in the school's mission statement by way of its TEMPOS

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campaign³. In addition, teaching and learning strategies are informed by institutional indirect assessment results, periodically collected and reviewed by the Office of Planning and Assessment and the school's faculty⁴. Teaching and learning strategies are also externally referenced systematically (e.g., the Annual Stakeholder's Conference) through continuing consultations with non-board key stakeholder groups, including employers, business and community leaders, accreditation and ministerial agencies, alumni, students, peer institutions, and business and governmental agency representatives.

A component of all courses, as a part of the teaching and learning strategies, is to maintain academic rigor and to be intellectually challenging. This is validated in institutional survey results. However, School of Management faculty members utilize an overall collective portfolio of strategies/initiatives that obtain from the aforementioned sources in delineating those that are most appropriate or emphasized in the courses they lead.

In this course (QANT300), four (4) prioritized teaching and learning strategies focus on:

1. active student engagement into the learning process;
2. innovative and creative thinking;
3. relevant content to student future careers/goals; and
4. case-based learning.

All faculty members that instruct this course should consider how to execute the course to emphasize these key components of the strategies considered. Following a review of learning outcomes, faculty members consider how re-orientation of teaching and learning strategies might result in strengthening these outcomes, and adjustments are made, accordingly. Faculty members also consider how the School of Management Triple Platforms of Excellence (Professional Enrichment, Experiential Education, and Student Advancement) might be leveraged as a part of this strategy, and provide recommendations to the Directors of those platforms. The school also reviews the distribution of identified teaching and learning strategies periodically to ensure comprehension and the integration of each (from the designated list of approximately 20-25 strategies) within the curriculum. Finally, results from student teaching evaluations also provide indications of how various teaching and learning strategies are integrated into the course delivery. The following issues (indicator number is provided) are among those in the evaluations that bear on this review and analysis:

7. The amount of work in this course was appropriate.
15. The instructor was available for course related consultation and advice.

³ Teaching and Learning Strategies: "TEMPOS and the Millennials," revised September 2008.

⁴ E.g., Student Survey on Teaching Quality – Quantitative Data: School of Management.

- 17. The instructor assigned challenging course work.
- 18. The instructor graded and returned student work and exams promptly.
- 19. The instructor provided helpful, constructive feedback on assignments and course work.
- 20. The instructor respected cultural differences and diversity among students.
- 21. The instructor incorporated information technology (e.g. computer or the Internet) in the course.
- 25. The instructor challenged me to think.

Along with teaching and learning strategies, the notion of student effort/time on task is also considered, although it is not necessarily driven by metrics. It is noted that the notion of student effort, specifically metric driven, is not a universally adopted approach⁵. However, if an instance occurs where student learning outcomes do not meet targeted academic standards, the School of Management utilizes indirect inputs in this area to explore the interdependencies between factors including the amount of work required in the course, the degree of challenge in the coursework, and level of critical analysis, among others⁶.

This course introduces students to math models by way of utilizing existing model structures to solve operations problems. These models build upon QA201 for those that are stochastic in nature. Teaching methodology is Socratic and problem oriented, supplemented by discussions concerning implications to management policy. Software is used for the purpose of deriving solutions to the problems and models presented.

- 7. Required Resource(s)
Heizer J., and Render B. (2010). *Operations Management*. 10th Edition. Pearson-Prentice Hall. ISBN 013: 978-0-13-611941-8.
- 8. Reference Resource(s)
Stevenson. (2006). *Operations Management with Student DVD*. 9th Edition. McGraw-Hill. ISBN 13: 9780073290942.
- 9. Assessment Methodology and Grading Guidelines

⁵ See the Victorian TAFE Association Response – Strengthening the AQF: Proposal, June 2009. East Melbourne, Victoria, Australia, retrieved from http://www.vta.vic.edu.au/docs/PositionDiscussion%20Papers/VTA_Response_Strengthening_the_AQF.pdf on February 22, 2010.

⁶ Sample data regularly collected through the New York Institute of Technology Student Rating of Courses/Teaching Form.

Instrument	Points (i.e. weights)	Time on Task ⁷
Two Tests	200 points (100 each)	12 hours
Case Study Presentation (see A1)	50 points	24 hours
Business Research Homework (see A2)	40 points (20 each)	18 hours
Student Project (See A3; B1)	50 points	18 hours
Quizzes (see A4)	60 points (10 points each)	9 hours
Graded Homework Assignment (see A5)	60 points (20 points each)	9 hours
TOTAL	460 points	90 hours

10. Grading Guidelines:

11. **Attendance Policy:** Students are expected to attend every class session. Instructors will inform students of the exact number of absences and late-arrivals permitted during the semester. Students who exceed these limits may be subject to failure. If a student misses any class or test, the instructor has the right to either grant or deny an opportunity to make up the work that was missed. In such cases, the instructor shall be the sole judge of the validity of a student's explanation for having missed the class or test.

12. Deductions for Late Arrival, Early Departure, and Unexcused Absences:

13. Policy for Make-Up Assignments or Quizzes:

14. **Classroom Behavior:** Behavior that disrupts, impairs, interferes with, or obstructs the orderly conduct, processes, and functions within an academic classroom or laboratory violates the student code of conduct and may result in disciplinary action. This includes interfering with the academic mission of NYIT or individual classroom or interfering with a faculty member's or instructor's role to carry out the normal academic or educational functions of his classroom or laboratory, including teaching and research.

15. Students with Physical or Educational Challenges:

- It is the policy of New York Institute of Technology to provide reasonable accommodations for students who are otherwise qualified but have disabilities, including learning disabilities, health impairments, and other disabling conditions. Possible accommodations include, but are not limited to, test schedule modifications, class relocation, and possible assistance in acquisition of necessary equipment.
- The college has an interest in helping students with disabilities to be competitive in this academic environment. Therefore, reasonable accommodations will be made upon proof both of disability and need for the accommodations. It must be understood that accommodations are meant to facilitate educational

⁷ An estimate of the period of time during which a student is actively engaged in a learning activity, excluding classroom contact hours.

opportunities. Admission to NYIT and accommodations do not guarantee success. Therefore, in addition to accommodations, the college encourages utilization of auxiliary services available to all students to maximize opportunities for success. Students whose disabilities may require some type of accommodation must complete a request for accommodations form and an intake interview with their campus services coordinator prior to the academic semester. Accommodations maybe requested at any time during the semester; however, accommodations cannot be applied to past failures, only to future academic endeavors. Appropriate modifications of accommodations will be worked out on a case-by-case basis and will not necessarily incorporate all requested changes.

- Students for whom auxiliary services—such as readers, interpreters, note takers etc.—have been approved should arrange these with their campus services coordinator. In addition to discussing appropriate educational modifications, the campus services coordinator will serve as a liaison with other college faculty and administration on behalf of students with disabilities.

16. Academic Integrity:

- Each student enrolled in a course at NYIT agrees that, by taking such course, he or she consents to the submission of all required papers for textual similarity review to any commercial service engaged by NYIT to detect plagiarism. Each student also agrees that all papers submitted to any such service may be included as source documents in the service's database, solely for the purpose of detecting plagiarism of such papers.
- Plagiarism is the appropriation of all or part of someone else's works (such as but not limited to writing, coding, programs, images, etc.) and offering it as one's own. Cheating is using false pretenses, tricks, devices, artifices or deception to obtain credit on an examination or in a college course. If a faculty member determines that a student has committed academic dishonesty by plagiarism, cheating or in any other manner, the faculty has the academic right to 1) fail the student for the paper, assignment, project and/or exam, and/or 2) fail the student for the course and/or 3) bring the student up on disciplinary charges, pursuant to Article VI, Academic Conduct Proceedings, of the Student Code of Conduct. The complete Academic Integrity Policy may be found on various NYIT Webpages, including: <http://www.nyit.edu/images/uploads/academics/AcademicIntegrityPolicy.pdf>.

17. 15 Week Topical Class Schedule

Week	Topic	Chapter
Wk 1	Operations and Productivity	Ch. 1
Wk 2	Operations Strategy in a Global Environment	Ch. 2
Wk 3	Project Management	Ch. 3

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Wk 4	Just-in-Time and Lean Operations	Ch. 16
Wk 5	Managing Quality and Statistical Quality Control	Ch. 6 & Suppl. 6
Wk 6	Forecasting	Ch. 4
Wk 7	Capacity Planning	Suppl. 7
Wk 8	Exam 1	As listed above
Wk 9	Location Strategies	Ch. 8
Wk 10	Supply Chain Management	Ch. 11
Wk 11	Outsourcing as a Supply Chain Strategy	Suppl. 11
Wk 12	Inventory Management	Ch. 12
Wk 13	Materials Requirement Planning (MRP)	Ch. 14
Wk 14	Short Term Scheduling/Group Presentations	Ch. 15
Wk 15	Final Exam	

18. Using the NYIT Library

All students can access the NYIT virtual library from both on and off campus at www.nyit.edu/library. The same login you use to access NYIT e-mail and NYITConnect will also give you access to the library's resources from off campus.

On the left side of the library's home page, you will find the "Library Catalog" and the "Find Journals" sections. In the middle of the home page you will find "Research Guides;" select "Video Tutorials" to find information on using the library's resources and doing research.

Should you have any questions, please look under "Library Services" to submit a web-based "Ask-A-Librarian" form.