

DEPARTMENT OF SUPPLY CHAIN MANAGEMENT

W. P. CAREY SCHOOL OF BUSINESS

PH.D. PROGRAM

DOCTORAL STUDENT HANDBOOK

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I. INTRODUCTION TO THE SCM PROGRAM

1. Preface

This handbook is designed to codify and clarify the various procedures and requirements relating to graduate work in Department of Supply Chain Management. Questions of interpretation should be addressed to Dr. Scott Webster, Doctoral Program Coordinator for Supply Chain Management. This is a *living document*.

Mission

Maximize the impact on the future state of knowledge by mentoring and training Ph.D. students to become successful researchers and educators at top tier research universities.

Objective

Prepare future scholars to conduct high-quality research and teach in the field of supply chain management, and to position our students for placement at a top-tier research university.¹

Training

SCM incorporates the core areas of logistics, operations management, and sourcing/purchasing. The Ph.D. program is a full-time residential program for students whose career goals are full-time university research and teaching upon completion of the degree. Students are trained to develop the capability to recognize SCM-related problems, frame these problems into research questions, and address them in a scholarly way. Students are encouraged to exercise their creativity and critical thinking. They are required to review, analyze, conduct, and publish research through a series of doctoral seminars and other course work that supplements and complements students' abilities and desires.

In addition, doctoral students need to work on ongoing research projects in conjunction with faculty members in the SCM Program and with CAPS Research—an affiliation between the W. P. Carey School of Business and the Institute for Supply Management (ISM). At the end of each summer, all students are required to submit at least one new manuscript to the Doctoral Committee for evaluation. During the residency, each student will be required to serve as a research assistant working with a faculty member and as a teaching assistant (with classroom responsibility). As a result, students will have a variety of experiences that will enhance their success as faculty members at leading institutions of higher education.

Desired Output

Placement in top 50 universities.

Qualifiers for placement at top 50 institutions:

- Likelihood of degree completed prior to leaving
- Articles accepted in peer-reviewed journals
- Teaching experience and good teaching evaluations

¹ The SCM department uses three lists as indicators of top tier research universities: (1) Top 50 universities on the [SCM Journal List](#) ranked according to the department A journal list: *Decision Sciences, Journal of Business Logistics, Journal of Operations Management, Journal of Supply Chain Management, Management Science, Manufacturing & Service Operations Management, Operations Research, Production and Operations Management*. (2) [Carnegie Research 1 universities](#) (limited to U.S. institutions). (3) [Top 200 in the QS World University Ranking](#).

- Strong content knowledge
- Strong skills in appropriate research methods
- Journal articles in the pipeline
- Collegiality

Winners for placement at a top 50 institutions:

- Journal articles accepted or published in premier academic journals
- Clear research program plan and strong potential for publication success
- Ability to teach in the MBA program immediately

Desired Input

Ideal candidates have some industrial experience and a master's degree in an SCM-related field.

Additional characteristics include:

- Writing skills
- Creativity
- Communication skills, verbal and written
- Willingness and ability to work independently and initiate projects
- Research skills and experience
- Desire to place in a top-tier business school
- Desire to exercise leadership in SCM field
- A collegial attitude
- Other attributes include:
 - Competitive GMAT scores
 - Competitive GPA in undergraduate and graduate work
 - Strong reference letters
 - Personal statement that demonstrates a fit between our goals to place our students at top business schools and the desires of the applicant
 - Other criteria deemed important by the SCM Doctoral Committee

Knowledge expectations upon arrival:

- Basic knowledge in purchasing/sourcing, operations management, and logistics
- Command of basic knowledge in operations management, sourcing/purchasing, and logistics from basic texts in these three areas
- MBA core knowledge competency
- Mathematics/statistics aptitude and knowledge
- Extensive computer skills
- Behavioral science foundation knowledge including human decision processes
- Some technical undergraduate studies and/or work background

2. Admission

The Supply Chain Management Program admits students who have demonstrated superior performance in previous degree programs and the Graduate Management Admissions Test (GMAT) or Graduate Research Examination (GRE). A full-time course load is required until successful completion of the

comprehensive exams. Students should be able to complete the degree program in four to five years, including course work, comprehensive exams, and dissertation.

Typically, financial assistance is provided for up to *five* years to students. Before a student can be admitted to the Ph.D. program in Supply Chain Management, all applications materials must be submitted through the Division of Graduate Studies. The application must then be approved by the program's graduate admissions committee and the associate dean in the W. P. Carey School of Business.

3. Doctoral Degree Plan of Study

The Ph.D. program consists of a minimum of 84 semester hours of approved graduate course work beyond the bachelor's degree, comprised of 60 hours of formal graduate course work in residence at ASU, 12 hours of research, and 12 hours of dissertation.

The SCM Department requires doctoral students to follow a sequence of 10 required courses (30 credit hours) with remaining course work selected in consultation with the student's advisor. Students who have completed a related masters-level graduate degree can potentially transfer up to 12 hours of credit to help satisfy the requirement of 60 hours of formal graduate course work in residence at ASU.

Doctoral students should consult his/her advisor to help develop a course-work plan that increases the probability of success in the doctoral program.

4. Desired Process

The program is generally viewed as an integrated 5-year process. Most students will serve in research assistantships for all five years. Teaching assistantships will typically be made during the last two or three years. This allows doctoral students to get research projects and manuscripts into the multi-year pipeline typical of accepted research articles. Through our centers, institutes, and faculty, the SCM program has special opportunities for externally-funded research projects. Students and their faculty advisors need to ensure synergy between a student's dissertation and externally-funded research work to avoid inadvertently delaying dissertation progress.

5. Summers

Summers are intended for manuscript writing. At the end of each summer, all doctoral students are required to submit at least one new manuscript ready for submission to a journal for publication. Students are encouraged to approach a faculty during the academic year for the purpose of supervising manuscript preparation and writing. The doctoral committee expects the bulk of the writing is to be done during the summer by the student.

A student who has not yet defended his/her dissertation proposal will submit his/her summer research paper in early fall (by end of September). One or more faculty (other than advisor) will evaluate the paper and provide feedback.

6. Course Work

During the program of study, each student is required to take at least 3 credits of summer internship (e.g., ECN 784) or independent study / research (e.g., SCM 792) that are directed by SCM faculty.

Timeline of Required Courses

Two weeks prior to year 1 fall semester

- ECN 594 – Math Economics (2 credit math boot camp; SCM students may elect to “audit” this class, which means that it is graded as pass/fail)

Year 1 – fall semester (students normally take 3 courses in their first semester)

- SCM 791 – Empirical Research Methods Seminar (normally offered every other year)
- SCM 791 – Topic Area Seminar (e.g., Operations Management in even years, Supply Management in odd years)
- Analytical Methods I: IEE 574 – Deterministic Operations Research²

Year 1 – spring semester

- SCM 791 – Analytical Research Methods Seminar (normally offered every other year)
- SCM 791 – Topic Area Seminar (e.g., Logistics Management in odd years, Inventory Management in even years)
- Analytical Methods II: IEE 575 – Stochastic Operations Research
- Empirical/Statistical Methods I: PSY 531 or STP 530 – Regression Analysis

Year 1 – summer

- Summer research project

Year 2 – fall semester

- SCM 791 – Topic Area Seminar (e.g., Supply Management in odd years, Operations Management in even years)
- Empirical/Statistical Methods II³

Year 2 – spring semester

- SCM 791 – Topic Area Seminar (e.g., Inventory Management in even years, Logistics Management in odd years)

Year 2 – summer

- Comprehensive exam
- Summer research project

In addition, SCM PhD students are encouraged to enroll in the one-credit seminar, MGT 791 – Theory Building, during the first two years of their program. This course will likely be offered in alternating years by the management department.

Example Course Sequences

Example course sequence for a student with more of an empirical focus – required courses in grey. This is only an example of a 20-course (60 credit hour) sequence. Students select non-required courses in consultation with his/her advisor.

Two weeks prior to year 1 fall semester

- ECN 594 – Math Economics

Year 1 – fall semester

- SCM 791 – Empirical Research Methods Seminar

² Students with a strong math background may wish to take IEE 620 and IEE 622 in place of IEE 574 and IEE575.

³ Specific course to be determined with advisor, e.g., PSY 532 – Analysis of Multivariate Data, ECN 527 – Categorical Data Analysis, IEE 670 – Mathematical Statistics, to name a few possibilities

- SCM 791 – Topic Area Seminar
- Analytical Methods I

Year 1 – spring semester

- SCM 791 – Analytical Research Methods Seminar
- SCM 791 – Topic Area Seminar
- Analytical Methods II
- Empirical/Statistical Methods I

Year 2 – fall semester

- SCM 791 – Topic Area Seminar
- Empirical/Statistical Methods II
- PSY 534 – Psychometric Methods or MGT 791 or MKT 791
- STP 532 – Applied Nonparametric Statistics or MGT 791 or MKT 791

Year 2 – spring semester

- SCM 791 – Topic Area Seminar
- MGT 791 – Research Methods II
- PSY 533 – Structural Equation Modeling
- STP 527 – Statistical Large Sample Theory or MGT 791 or MKT 791

Year 3 – fall semester

- MGT 791 or MKT 791 or PSY 534 – Psychometric Methods
- PSY 591 – Seminar on Judgement & Decision-Making or MGT 791 or MKT 791
- PSY 539 – Multilevel Models Psych

Year 3 – spring semester

- PSY 555 – Exper/Quasi-Experiment Designs or IEE 572 – Design Engineering Experiments
- ECN 725 – Econometrics I

Example course sequence for a student with more of an analytical/econometric focus – required courses in grey. This is only an example of a 20-course (60 credit hour) sequence. Students select non-required courses in consultation with his/her advisor.

Two weeks prior to year 1 fall semester

- ECN 594 – Math Economics

Year 1 – fall semester

- SCM 791 – Empirical Research Methods Seminar
- SCM 791 – Topic Area Seminar
- Analytical Methods I

Year 1 – spring semester

- SCM 791 – Analytical Research Methods Seminar
- SCM 791 – Topic Area Seminar
- Analytical Methods II
- Empirical/Statistical Methods I

Year 2 – fall semester

- SCM 791 – Topic Area Seminar

- Empirical/Statistical Methods II
- ECN 510 – Microeconomics Theory and Application
- IEE 534 – Supply Chain Modeling/Analysis or CSE 556 – Game Theory with App. to Networks

Year 2 – spring semester

- SCM 791 – Topic Area Seminar
- IEE 545 – Simulating Stochastic Systems
- IEE 670 – Mathematical Statistics
- ECN 725 – Econometrics I

Year 3 – fall semester

- ECN 712 – Microeconomic Analysis I
- ECN 770 – Mathematics for Economists or MAT 570 – Real Analysis I
- ECN 726 – Econometrics II or IEE 620 – Optimization I

Year 3 – spring semester

- ECN 713 – Microeconomic Analysis II or MAT 571 – Real Analysis II
- IEE 622 – Optimization II or IEE 640 – Probability and Stochastic Processes

II. ANNUAL REVIEWS, EXAMS, AND DISSERTATION

1. Annual Review/Evaluation

At least once a year, an annual review of each Ph.D. student will be conducted to monitor the progress of that student. The objectives of the review are to recognize outstanding performance, correct any problems that might have arisen, prevent possible problems from occurring, and to encourage professional development. Each year, one student is selected to receive the “Distinguished SCM Doctoral Fellowship.”

Prior to annual review, each student submits a two-page development plan to the SCM PhD Program Coordinator. This document includes (1) target schools (e.g., where you would like to work upon graduation), (2) number of existing and projected publications and target journals, (3) your strengths and weaknesses as a developing scholar, (4) how you plan to solidify your strengths and improve on your weaknesses.

The review committee will consist of the SCM Doctoral Program Committee and Ph.D. Coordinator. Progress will be reviewed with regard to the successful completion of course work, comprehensive examinations, and with regard to the teaching and research assistantships held by the student. *If progress is not acceptable, withdrawal from the program may be recommended.* All faculty who have had graduate assistants assigned to them during the year will also provide input to the review process.

Evaluation Criteria

The SCM Doctoral Committee may also make recommendations concerning the continuation of financial aid and also for the discontinuation of financial aid. The primary factors taken into account by the SCM Doctoral committee when evaluating a student are the following:

- a. Grades
Graduate students are expected to maintain a minimum of 3.00 GPA. The SCM Doctoral Program Committee views a GPA below a 3.00 as cause for termination of aid and a recommendation to withdrawal from the program.
- b. Assignments
Graduate students are expected to fulfill all duties associated with any teaching or research assignments. All students are expected to teach and work for faculty members during their graduate studies, regardless of whether they have full external financial support. The department may consider reducing teaching assignments for students who are fully supported by external grant (stipend and tuition support) during the same academic year, if resources permit. This is an important aspect of doctoral education. *The SCM Doctoral Program Committee views any failure to fulfill these duties as cause for termination of aid. A student's refusal to work during graduate studies is viewed as grounds for asking the student to leave the program.*

When a student submits a written document to a faculty to review, a typical turn-around time is 2 weeks. Unless otherwise understood, the preceding statement does not obligate the faculty to review any documents. It is incumbent on students to seek out faculty and initiate the dialogue.
- c. Satisfactory Progress in the Doctoral Program
Graduate students are expected to complete all program requirements, such as completion of required courses and meeting the qualification requirements for the Ph.D., typically in 2-3 year time frame. The SCM Doctoral Program Committee views any failure to do so as cause for termination of aid and recommended withdrawal from the program. Students are encouraged to submit at least one article at a peer-reviewed journal by the end of year 2.

d. Seminar Participation

All Graduate students are expected to participate in SCM sponsored seminars. The SCM Doctoral Program Committee views seminar participation as an important component of the student's educational experience.

e. International Student English Language Requirement

All students for whom English is not their first language are required to demonstrate English language proficiency during the first semester of their Ph.D. program. This can be completed in any one of four ways: (1) SPEAK test, (2) IELTS test, (3) TOEFL iBT, (4) ITA Teacher Training Course. Details on these four options, including minimum scores for each option, are available at <https://learnenglish.asu.edu/international-teaching-assistant>. The student will be expected to retake the test (or ITA Teacher Training Course) until he/she passes it. If he/she does not pass by the end of his/her first year of study, he/she will lose University funding. Students will not be allowed to take the comprehensive exam without passing the requirement.

f. Collegiality

Collegiality and working with your fellow graduate students is an important part of doctoral education, and one of the reasons the department of SCM accepts only full-time students in residence. A student's ability and willingness to work with others is included as an important point in each student's evaluation.

2. The Comprehensive Exam

Each student is required to successfully complete a comprehensive examination that covers the field of Supply Chain Management.

Each student must complete the examination upon the completion of two-year curriculum. Depending on the evaluation results, a student who fails the written comprehensive exam the first time may be asked to leave the program or may be given an opportunity to retake the exam the following year. No student may sit for the examination until all course work in the approved Program of Study (POS) is completed. If a student fails⁴ any required course in the two-year curriculum (but is still meeting the 3.0 GPA requirement), the student will be placed on probation until passing the course the next time it is offered. During the probation, the student can take the comprehensive exam at the regular time; a second fail in the course or failing the written comprehensive exam during probation will lead to recommendation to withdraw from the program.

The comprehensive exam will be offered as a *take-home exam* and will consist of questions from two methods courses (analytical, empirical) and four content areas (inventory, logistics, operations, sourcing). The questions are designed to test the student's ability to: (1) integrate, interpret, and critically assess the body of SCM knowledge; (2) frame well-posed research questions to advance the state of knowledge; (3) identify a viable research design for a research question and apply appropriate SCM research methods. The purpose of the comprehensive exam is to test mastery of content in all areas of SCM and to test readiness to undertake the dissertation.

Per Graduate College policy, *"During the fall, spring or summer session that the student takes the comprehensive examination(s), they are required to register for: At least one semester hour of credit that appears on the Interactive Plan of Study; OR At least one semester hour of appropriate graduate-level credit, for example Research (792), Dissertation (799), or Continuing Registration (795)."*

⁴ Failing grade is "D" or lower. See https://graduate.asu.edu/sites/default/files/asu-graduate-policies-and-procedures_032019.pdf under "The Interactive Plan of Study (iPOS)" and "Coursework".

Further information about Doctoral Comprehensive Exams can be found on page 19 of the [ASU Graduate Policies and Procedures Manual](#)

Comprehensive Exam Process

The exam will be distributed shortly after the end of the Spring Semester. Students will have two weeks to complete the exam.

The examination committee, as described below, will review the completed written responses from the students. The purposes of the review are (1) to evaluate the capability of the student to continue in the program, (2) to provide direction and move the student forward in the program, (3) to provide transition from coursework to the dissertation phase, and (4) to improve the student's ultimate ability as a faculty member at a major research university.

Upon the completion of reviews by the examination committee, each student will meet with the committee members and receive feedback. A student may receive *a pass, a retake, or a dismissal from the program*. Under no circumstances, a student is allowed to take the comprehensive exam more than twice.

Exam Grading⁵

Questions for each comprehensive exam topic (i.e., four content seminars, two methods courses) are evaluated by two faculty, and receives one of three possible grades: pass (P), pass with reservations (PR), fail (F).

- P/P, PR/P: A topic that receives P/P or PR/P will be interpreted as pass. No further action is required.
- PR/PR, F/P: A topic that receives PR/PR or F/P will require one of the following actions as determined by faculty evaluators: (1) Student prepares a written plan, including a timeline, for strengthening areas of weakness to be approved by faculty evaluators. Upon completion, faculty evaluators assess whether or not the plan has been completed to satisfaction. If not satisfactory, then actions under the F category below apply. (2) Student rewrites answers to this portion of the exam. The deadline for completion is determined by faculty evaluators. (3) Student takes an oral exam conducted by faculty evaluators. The purpose to determine if weaknesses observed in the exam answers are major or minor. If determined to be major, then actions under the F category below apply.
- F/PR, F/F: A topic that receives F/PR or F/F will be interpreted as fail and will require one of the following actions as determined by faculty evaluators: (1) Student rewrites answers to this portion of the exam. If the rewritten answers are not satisfactory, then the following action applies. (2) Student retakes this portion of the exam either the following year's exam or during the fall or as determined by faculty evaluators.
- Finally, a student who fails three or more topic areas fails the exam. Depending on the evaluation results, a student who fails the written comprehensive exam the first time may be asked to leave the program or may be given an opportunity to retake the exam the following year or during the fall.

Examination Sub-Committee

⁵ Exceptions may occur when deemed appropriate by faculty.

The examining committee will consist of members to be selected from the SCM Doctoral Program Committee, and the faculty members who have taught the SCM 791 doctoral seminars. As per the School of Business Ph.D. program document, each examined student's program chair must be a member of the examining committee. Selected faculty in the SCM program will be asked to submit questions for the examination. In Department of Supply Chain Management, the Doctoral Program Coordinator serves as the Program Committee Chair for the student.

Official Notification of Results

The examining committee will notify the student, the student's Program Committee Chair, and the Associate Dean of Academic Programs of the results of the examination.

Invitation to rewrite for informal feedback

One or more students may be invited to rewrite the responses to questions for developmental purposes. A student may do so *once*, and within the deadline set by the faculty. Anything beyond this, the student needs to make special arrangements with each faculty.

3. Dissertation

The dissertation is a major research project that should lead to publishable quality manuscripts. The dissertation typically requires at least the equivalent of one year of full-time academic work. Each student will have a dissertation committee composed of a chair and at least two, but no more than four, additional members. The purpose of this committee is to guide the student through the dissertation and to approve the final dissertation. The chair or co-chair must be a fulltime faculty member in the Department of Supply Chain Management or be approved by the SCM Doctoral Committee.

Dissertation Proposal

Each student will prepare and present a formal dissertation proposal. The proposal must be presented in a seminar open to all faculty and students. The dissertation committee determines the format of the seminar and determines whether or not the student has successfully defended the proposal. The dissertation committee chair then notifies the Associate Dean of Academic Programs with written notification of successful completion of the proposal.

Three Paper Option

A student may write three related but independent papers to meet the requirement of dissertation. The student must have intellectual ownership of these papers and the dissertation committee must approve these three papers. At least one paper must involve data, collected from the real world or generated from simulation or mathematical models.

Final Oral Defense

A final oral examination in defense of the dissertation is required and must follow the guidelines established by the Division of Graduate Studies. Each student should complete the final oral examination **within five years** after passing the comprehensive examination.

4. Termination from the Program

The doctoral committee may ask the student to leave the program at any time during his/her doctoral study, if the committee decides that the student is not making appropriate progress toward the

matriculation of the degree. The student will be obligated to follow the instructions of the committee as articulated in the written letter, and in accordance with the W. P. Carey college-level policy.

III. OTHER ASPECTS OF THE PROGRAM

1. Recommended Reading Prior to First Semester

The following is a list of recommended textbooks for incoming PhD students. Each book provides general knowledge of the supply chain area and exposure to some of the classic papers in the field. We encourage students to consider one or more of the books, select at least one, and read prior to the first semester.

Bowersox, D., D. Close, M.B. Cooper. 2009. *Supply Chain Logistics Management*, 4th edition, McGraw-Hill.

Krajewski, L.J., M.K. Malhotra, L.P. Ritzman. 2015. *Operations Management: Processes and Supply Chains*, 11th edition, Pearson.

Monczka, R.M., R.B. Handfield, L. Giunipero, J.L. Patterson. 2016. *Purchasing and Supply Chain Management*, 6th edition, Cengage.

Stock, J.R., D.M. Lambert. 2000. *Strategic Logistics*, 4th edition, McGraw-Hill.

Webster, S., 2009. *Principles of Supply Chain Management*, 2nd edition, Dynamic Ideas.

2. Initial Faculty-to-Student Assignments

Between one to three faculty members are assigned to each incoming PhD student. Students regularly meet with assigned faculty to discuss research ideas and for guidance related to coursework. In addition to helping a student with his/her transition to doctoral study, a goal is to help a student identify a project for first-year summer research. Before the end of the second semester, a student will have identified a summer research project and a faculty member who will help with the project. One of the initially assigned faculty may ultimately serve as the student's dissertation advisor, but this is not required. Obligations of faculty advisors also include regular communication with the advisee, annual evaluation of the advisee, summer paper assessment (not necessarily for one's own advisees), and communicating problematic performance/behavior to the doctoral committee.

3. Job Placement

The *dissertation chairperson* coordinates the placement activity of their respective Ph.D. student. Students entering the Ph.D. market are given information on how jobs are advertised, the annual meetings of their area specialties and other regional meeting where job interviews occur, and the development of an individual placement package. The placement package generally includes a vita, four letters of recommendation, and the candidate's job market paper. In addition, the SCM Department provides partial funding to national job market meetings.

4. Travel Grants

The department provides funding to support doctoral student travel, subject to availability of funds. All students are required to have applied for the Division of Graduate Studies and university-level travel grant prior to receiving travel support from the department: <https://graduate.asu.edu/current-students/funding-opportunities/awards-and-fellowships/travel-awards>. The Division of Graduate Studies announces travel grants for all regularly admitted doctoral and master's students who will present papers, research projects, or creative activities at regional or national conferences. Students are also expected to obtain approval from their advisor.

At the conference, all students are expected to attend sessions and actively participate in conference events. The approved list of conferences includes: Academy of Management, Council of Supply Chain Management Professionals, Decision Sciences Institute, INFORMS, Manufacturing and Service Operations Management (MSOM), North American Research Symposium, and Production and Operations Management Society (POMS). Other academic or industry conferences may qualify and are by request.

The order of priority for funding is as follows:

1. Doctoral students on the job market—each should be funded for at least one conference per year where substantial recruiting occurs, assuming the student has a realistic chance of employment at a top 50 U.S. business school.
2. Doctoral students who are presenting competitive papers at conferences—with priority in funding in order of seniority in the program.
3. Doctoral students who are "ready" for a doctoral consortium or presenting a research paper at a major conference—.

5. Plagiarism

Any doctoral student caught in the act of plagiarism is *subject to immediate dismissal from the program*. According to Arizona Administrative Code: Title 7 Education, Chapter 4, Arizona Board of Regents, plagiarism means “intentionally or knowingly representing the words or ideas of another as one’s own in any academic exercise” (R7-4-101, Definitions #11). Further, “the following misconduct is subject to disciplinary action: 1. All forms of student academic dishonesty, including cheating, fabrication, facilitating academic dishonesty and plagiarism” (R7-4-102, Prohibited conduct). The formal Student Academic Integrity Policy is available at: http://www.asu.edu/studentaffairs/studentlife/judicial/academic_integrity.htm.

6. Scholarships Available

Qualifying academic units are invited to nominate students for scholarships. Recipients will be chosen from the pool of nominees. Nominees must be regularly admitted to a graduate degree program to be eligible. International students must have been enrolled at ASU or at another U.S. university for one academic year immediately prior to the award period to be eligible.

7. Forms and Procedures

Information on the Arizona State University Division of Graduate Studies policies and procedures can be found at <http://www.asu.edu/graduate>. All forms can be found online at <http://graduate.asu.edu/forms>.

8. Quick Guide to Completion of Ph.D. Degree

Most information about the Ph.D. program can be found on the Graduate College website at <http://graduate.asu.edu/currentstudents>.

1. After the first year, the student must establish a Program of Study (POS) Committee chair. The chairperson must be selected from the student’s area of concentration.

2. Submission of official Ph.D. Program of Study online (iPOS). The iPOS should be completed once you have taken or are signed up for your 27th credit hour. It must be approved in the system before you take your comprehensive exams. This is when you will officially state who your Committee chair is. Requires approvals of Committee chair, the Graduation Office, and the Graduate College before it is complete.
3. Completion of required course work.
4. Administration of Comprehensive Written Examination. Each department appoints an examining committee to prepare and evaluate the comprehensive examinations administered through their areas. When a student has completed all course work and is ready to take the written comprehensive examination, he/she must obtain the “Report of Doctoral Comprehensive Examinations and Approval of the Ph.D. Dissertation Prospectus” form from the Graduate College forms web-link. The student completes the application, obtains the signatures of the committee members, and returns the forms to the Caitlin Unick or Dr. Scott Webster no later than one month prior to the date of the examination. This exam is taken within one year following the completion of the course work on the iPOS.
5. A Dissertation Committee should be established soon after passing the comprehensive examination. The Committee must consist of a minimum of three faculty members with a majority of the faculty, including the chair, coming from the candidate’s area of concentration. This committee is appointed on the iPOS. If there is a change to this committee you need to fill out a change form.
6. Dissertation proposal announcement.
7. Acceptance and application to candidacy processed via Office of the Registrar-Graduation Section.
 - a. Once a doctoral student has successfully defended his/her proposal, business cards can be requested through the department. The doctoral student will be referred to as “Doctoral Candidate” on the card.
8. File of Graduation Application and paying the application fee with ASU Cashiering Services.
9. Final oral defense of Dissertation is mandatory and must be held on the campus of ASU. The oral defense will be scheduled by the supervisory committee with the approval of the dean of the Division of Graduate Studies. The candidate must take the final oral examination in defense of the dissertation within five years after passing the comprehensive examinations. The supervisory committee and the dean of the Division of Graduate Studies must approve any exceptions. Find format review form and guidelines online at <http://graduate.asu.edu/how-to>. When the time of the dissertation defense is established, the student completes the interactive announcement form via myASU (on the defense tab) at least 10 working days before the anticipated defense. Please see 10-working day calendar for permissible defense dates:
http://graduate.asu.edu/progress/completing/defenses/scheduling_your_defense

IV. FACULTY BIOGRAPHIES

The Supply Chain Management faculty is composed of leading researchers and award-winning teachers. SCM faculty members have authored high-impact research articles and highly visible books in each of the SCM disciplines. Our faculty travel throughout the United States, Europe, China, Japan, and other parts of the globe to conduct research, teach executive courses, present papers at professional and academic conferences, and provide consulting services.

The faculty members are leaders in their field and are active in research, publishing, teaching, and consulting. All have advanced degrees, and many have extensive management experience. Through a balanced curriculum, the faculty helps students develop a broad understanding of supply chain processes and the operation of modern organizations.

Research and clinical faculty are listed below. Some teaching faculty members get involved in the doctoral program by helping the students learn the trade of teaching. Some faculty members get involved in the doctoral program by supervising a dissertation or by serving as a member of a dissertation committee. Some co-author research papers with students. Emeriti faculty (included below) may offer additional perspectives on a career as an academic. There are many other faculty members in the W.P. Carey School of Business and the Ira A. Fulton School of Engineering that are available to support doctoral research. The present members of the Doctoral Committee are: Craig Carter, Tom Choi, Kevin Dooley, Tom Kull, Elliot Rabinovich, Scott Webster (Chair), and Rui Yin.

- Daniel Brooks (Ph.D., Indiana University), Associate Professor Emeritus. Joined ASU in 1977. Dr. Brook's research and interests include risk assessment, risk cost/benefit analysis and subjective probability estimation.
- Reynold Byers (Ph.D., University of Rochester), Clinical Professor, Faculty Director for Evening and MBA programs. Dr. Byers joined the SCM department in 2007. His teaching interests cover a wide variety of courses, including operations management, decision models, project management, supplier management and negotiation, service operations management, and sustainability and social responsibility. His early research interests were focused on economic and queuing models of service operations management. Recently he has been involved in a research project focused on contracting to induce ethical behavior by suppliers. His work has appeared in *Journal of Management Information Systems* and *Manufacturing & Service Operations Management*.
- Craig Carter (Ph.D., Arizona State University), John G. and Barbara A. Bebbling Professor of Supply Chain Management; Editor Emeritus and Advising Editor, *Journal of Supply Chain Management*; Fearon Fellow, CAPS Research. His primary research stream focuses on sustainable supply chain management, and encompasses ethical issues in buyer-supplier relationships, environmental supply management, diversity sourcing, perceptions of opportunism surrounding electronic reverse auctions, and the broader, integrative concepts of social responsibility and sustainability. Dr. Carter has used a number of research methodologies to triangulate findings within this research focus, including surveys, case studies, laboratory experiments, individual and focus group interviews, the mapping of social networks, and systematic literature reviews including meta-analyses. Professor Carter has five years of experience in the areas of transportation and logistics with Ryder Systems, Hechinger Company, and the U.S. Department of Transportation. He has also conducted field-based supply management research with over 100 Fortune 1000-size firms in the U.S. and Germany, which includes work with CAPS Research and McKinsey & Company. Dr. Carter's research has been published in the *Journal of Supply Chain Management*, *Journal of Operations Management*, *Journal of Business Logistics*, *Decision Sciences*, *Journal of Business Ethics*, *Transportation Research Part E*, *Transportation Journal*, and *International Journal of Physical Distribution and Logistics*

Management. He serves on several journal review boards, and is an Associate Editor for the *Journal of Operations Management*, *Journal of Business Logistics*, and *Decision Sciences*.

- Joseph R. Carter (D.B.A., Boston University; C.P.M.), Professor Emeritus. Professor Carter's research efforts have been oriented toward purchasing and supply management issues. Professor Carter's research contribution encompasses three major content areas: buyer and supplier communication processes and information exchange systems, international sourcing and supply management issues, and strategic procurement. Dr. Carter was a principle investigator on a major project examining the role of corporate procurement in the strategic outsourcing process and the outsourcing of procurement activities. Presently, Dr. Carter is co-investigator on a multi-phase study that examined the linkages between future trends, corporate objectives, and procurement strategies and tactics.
- Phillip L. Carter (D.B.A., Indiana University), Professor Emeritus, past Executive Director, Center for Advanced Purchasing Studies (CAPS Research). Joined ASU in 1995. Fellow of the Decision Science Institute and former editor of *The Journal of Supply Chain Management*. Author of four books and numerous papers in leading business journals. Professor Emeritus, Michigan State University.
- Thomas Y. Choi (Ph.D., University of Michigan), Harold E. Fearon Eminent Scholar Chair of Purchasing Management at W. P. Carey School of Business, Arizona State University. He leads the study of the upstream side of supply chains, where a buying company interfaces with many suppliers organized in various forms of networks. He has published in the *Academy of Management Executive*, *Decision Sciences*, *Harvard Business Review*, *Journal of Operations Management*, *Production and Operations Management* and others. He has co-authored two trade books on purchasing and supply management. Choi is executive director of CAPS Research, a joint venture between Arizona State University and the Institute for Supply Management. He also co-directs the Complex Adaptive Supply Networks Research Accelerator (CASN-RA), a research group focused on complex adaptive supply networks. In 2012, he was recognized as the Distinguished Operations Management Scholar by the OM Division at the Academy of Management, and has consulted with numerous corporations. He served as co-EIC for the *Journal of Operations Management* from 2011 to 2014. Recent consulting work with the U.S. Department of Energy focused on the role of supply chains in bringing sustainable energy technologies to market.
- Eddie Davila (MBA, Arizona State University), Principal Lecturer. Joined ASU in 1998. During his time at ASU Eddie Davila has taught courses on: Global Integrated Supply Chain Management and Operations, Small Business, Business Processes, Operations Consulting, Strategy, and Sustainability. Mr. Davila presently instructs nearly every new W. P. Carey School of Business student in the Introduction to Supply Chain Management course, entitled Global Supply Operations. This means he teaches about 1200 students per year, but that number may surge to over 2000 students in the years to come. As a result he is in charge of designing a state-of-the art online course that will feature high production videos and undergraduate-friendly podcast presentations that will all be made available for free to students and instructors at every other school. The class is due to pilot during spring of 2010. Mr. Davila's outside interests, which all make their way into his lectures, include music, yoga, modern medicine, acting, physics, fantasy baseball and football, procrastinating and all other things geeky.
- Kevin J. Dooley (Ph.D., University of Illinois at Urbana-Champaign), Professor, Dean's Council of 100 Distinguished Scholars. Joined the ASU Faculty in 1997. Dr. Dooley is a world-known expert in the application of complexity science to organizations. He has published over 100 research articles examining complexity and dynamical issues in quality, innovation, supply chain management, and

information systems. He co-authored the award winning book, “Organizational Change and Innovation Processes: Theory and Research Methods” (Oxford Press, with Drs. Poole, Van de Ven, & Holmes) and is on several journal editorial boards, including *Journal of Operations Management* and *Decision Sciences Journal*. He has co-authored two patents with Dr. Steven Corman concerning Centering Resonance Analysis, a novel form of network text analysis, and is CEO and co-founder of their spin-off company, Crawdad Technologies. Crawdad’s text analysis software is used in over 100 universities, and Crawdad is working with the U.S. government on anti-terrorism efforts. He has served as President, and is currently a Trustee for the Society for Chaos Theory in Psychology and the Life Sciences. Dr. Dooley teaches Ph.D. courses in research methods, and MBA courses in management of technology, six sigma, and lean manufacturing. He has consulted with over 100 companies in the areas of quality, organizational change, and innovation, including Intel, Motorola, Raytheon, Honeywell, 3M, EDS, Citibank, Banner Health, and Ford.

- Brett Duarte (Ph.D., Arizona State University), Clinical Assistant Professor and the Faculty Director for the Business Analytics Program. Joined ASU in 2017. Prior to ASU, Dr. Duarte worked as a Master Black Belt at IBM for 12 years. He was responsible for driving process improvement and optimization using Lean Six Sigma and Business Analytics. His research interests are in Lean Six Sigma, Quality Management, Simulation and Optimization of Supply chains. He is an avid tennis fan (Go Roger!) and loves playing soccer and racket ball.
- Mahyar Eftekhari (Ph.D., HEC Paris), Associate Professor. Joined ASU in 2013. He completed his PhD in Operations Management from HEC Paris. He received an MSc degree in Production and Operations Management from Chalmers University of Technology, Sweden. Prior to his PhD studies, Dr. Eftekhari has worked in the automobile industry and energy sector in Iran as management consultant. His current research focuses on humanitarian logistics. He is mostly interested in humanitarian logistics network design and the effects of earmarked budget on collaboration between large humanitarian organizations.
- John Fowler (Ph.D., Texas A&M University), Motorola Professor. Joined the Supply Chain Management Department in 2012. Dr. Fowler’s research areas are deterministic scheduling, discrete event simulation methodology, modeling and analysis of semiconductor manufacturing systems, operations research in health care, manufacturing applications of operations research and discrete event simulation.
- Mohan Gopalakrishnan (Ph.D., University of Alabama), Associate Professor and Chair of the Supply Chain Management Department. Dr. Gopalakrishnan’s research focus is on global supply chain risk management, health care operations management, “non-profit humanitarian” operations, Web-congestion and technology capacity management, and product design and target costing.
- Harish Guda (Ph.D., The University of Texas at Dallas), Assistant Professor. Joined ASU in 2019. His research interests are in technology-enabled innovation in operations management, two-sided markets and marketplace design (in particular, the sharing- and gig-economy), and pricing and revenue management. He has published articles in *Management Science* and *Production and Operations Management*.
- Donald L. Keefer (Ph.D., University of Michigan), Professor Emeritus. Joined ASU in 1987. Dr. Keefer’s research and teaching interests center on decision analysis and applied management science, areas in which he has fifteen years of industrial experience. He has published in a number of leading journals including *Management Science*, *Operations Research*, *Decision Analysis*, and *Interfaces*. He has been an Associate Editor for *Operations Research* and was the founding Contributing Editor for the Practice Abstracts feature in *Interfaces*. He currently served on the Editorial Board of *Decision*

Analysis. He was elected Chair of the Decision Analysis Society of INFORMS (1996 – 1998), which he also served as Vice Chair (1994 – 1996) and as Past Chair (1998 – 2000).

- Craig W. Kirkwood (Ph.D., Massachusetts Institute of Technology), Professor Emeritus. Joined ASU in 1983. Research areas include supply chain performance metrics, tradeoff and risk analysis for supply chains, and large-scale decision analysis models. Dr. Kirkwood has published in *Management Science*, *Operations Research*, *Interfaces*, and numerous other journals, and is the author of the book *Strategic Decision Making*. He has served in a variety of editorial and professional roles for the Institute for Operations Research and the Management Sciences, including Treasurer, and also as a member of the Advisory Panel for the Decision, Risk, and Management Science Program of the National Science Foundation. He is past President of the INFORMS Decision Analysis Society.
- Thomas J. Kull (Ph.D., Michigan State University), Professor. Joined ASU in 2007. Dr. Kull's research interests are supply management strategy, supply chain risk management and behavioral dynamics in supply chains. Dr. Kull has published in *Journal of Operations Management*, *Decision Sciences*, *IEEE Transaction on Engineering Management*, *International Journal of Operations Management*, and *European Journal of Operational Research*. He received honorable mention in the Elwood S. Buffa Doctoral Dissertation Award, and is an Award Winner at the Literati Network Awards for Excellence 2008. He has over 13 years of industry experience.
- Hongmin Li (Ph.D., Massachusetts Institute of Technology), Professor. Joined ASU in 2007. Her primary research stream focuses on supply chain decisions during product transitions when a company, as well as its competition, manages more than one generation of products simultaneously, such as generations of microprocessors for personal computers. She studies production and inventory control, capacity planning, and pricing within this context. Her secondary research focus is on supplier management and incentive structures when there is competition between suppliers or supply chains. She has articles on these topics published or accepted at *Manufacturing & Service Operations Management*, *Production and Operations Management*, *Operations Research*, and *Naval Research Logistics*. She has been the Principal Investigator or Co-PI on four research grants from the semiconductor industry.
- Arnold Maltz (Ph.D., The Ohio State University), Associate Professor Emeritus. Joined ASU in 1997. Dr. Maltz's research interests are third party logistics, and outsourcing, global logistics for high tech companies, and transporter logistics. Dr. Maltz has published in *The Journal of Business Logistics*, *International Journal of Logistics Management*, *International Journal of Logistics: Research and Applications*, and *Transportation Journal*, as well as other marketing, purchasing, and logistics journals. His work on outsourcing has resulted in awards from the Council of Logistics Management and Andersen consulting. He is a member of the Council of Logistics Management, the Warehousing Education and Research Council, and he has over 15 years of industry experience. Dr. Maltz has done research and taught in Israel, Mexico, Argentina, and Denmark.
- Srimathy Mohan (Ph. D., University of Montreal), Associate Professor. Joined ASU in 1999. Her primary research interests include planning and scheduling problems in healthcare, information and production supply chains. Specifically, she is working on operating room scheduling, capacity planning of web servers and production scheduling with setup times. Her secondary research interests include logistics and routing problems. She is interested in the optimal allocation and scheduling of resources in humanitarian logistics networks. These research projects have resulted in doctoral dissertations and master's theses. Her research has been published in a variety of journals, including *Management Science*, *Transportation Science*, *Decision Sciences*, *Interfaces*, *Journal of Supply Chain Management*, *International Journal of Production Research*, *European Journal of Operational Research*, and *INFORMS Journal on Computing*.

- Michele E. Pfund (Ph.D., Arizona State University), Clinical Professor, Associate Dean Undergraduate Programs. Dr. Pfund joined the Supply Chain department in 2005 and her teaching and research interests focus upon modeling complex systems through decision analysis, optimization, and simulation. Dr. Pfund has several years of relevant industry experience in these areas and has published in a number of leading journals including *IEEE Transactions on Semiconductor Manufacturing*, *International Journal of Production Research*, and *Computers and Operations Research*. Dr. Pfund is a member of INFORMS and is currently serving on the 2005 National Conference Program Committee. She is also a member of the Institute for Industrial Engineers and serves as the treasurer for the local Arizona Chapter.
- Antonios Printezis (Ph.D., Case Western Reserve University), Clinical Associate Professor. Joined ASU in 2005. Dr. Printezis joined ASU in 2005. He received his Doctorate from Case Western Reserve University in Operations Research and holds a Master's Degree in Chemical Engineering. Prior to Arizona State University, he taught courses on Business Statistics, Operations Management and Technology & Innovation at the Weatherhead School of Management at Case Western Reserve University and at Cleveland State University in the Department of Operations Management and Business Statistics. Prior to joining the academic community he held a Quality Control Engineer position for PepsiCo. His research has been published in a number of SCM journals including, *International Journal of Operational Research*, *Operations Research Letters*, *Interfaces*, *Decision Sciences* and *Quality Management in Healthcare*. His current projects and research interests focus on Sustainability and Supply Chain Management. Dr. Printezis has been teaching and developing courses for W.P.Carey and the School of Sustainability on topics including Global Supply Operations, Business and Sustainability, Control Systems and Operations Management.
- Elliot Rabinovich (Ph.D., University of Maryland), Avnet Professor of Business and Supply Chain Management. Joined ASU in 2001. Dr. Rabinovich is the current director of the PhD program in SCM. His current research interests include supply chain management and logistics in internet-retailing environments and enterprise-wide coordination of inventory management practices and information technology. Dr. Rabinovich has published over 20 articles in *California Management Review*, *Decision Sciences*, *Journal of Business Logistics*, *Journal of Operations Management*, *Transportation Research (E): Logistics and Transportation Review*, *Production and Operations Management*, *Sloan Management Review*, and others.
- Dale Rogers (Ph.D., Michigan State University), ON Semiconductor Professor of Business, Logistics, and Supply Chain Management. He is also the Director of the Network for Value Chain Excellence and the Co-Director of the Internet edge Supply Chain Lab at ASU. Dr. Rogers is the Leader in Supply Chain Finance, Sustainability, and Reverse Logistics Practices for ILOS - Instituto de Logística e Supply Chain in Rio de Janeiro, Brazil. In 2012 he became the first academic to receive the International Warehouse and Logistics Association Distinguished Service Award in its 120-year history. He is a Board Advisor to Flexe and serves on the Board of the Reverse Logistics and Sustainability Council. He is a leading researcher in the fields of reverse logistics, sustainable supply chain management, supply chain finance and secondary markets, has published in the leading journals of the supply chain and logistics fields. He has been principal investigator on research grants from numerous organizations. He is a senior editor at *Decision Sciences* and associate editor of the *Journal of Business Logistics* and the *Journal of Supply Chain Management*. He has made more than 300 presentations to professional organizations and has been a faculty member in numerous executive education programs at universities in the United States, China, Europe and South America as well as at major corporations and professional organizations. Dr. Rogers has been a consultant to several companies and a principal investigator on research grants from numerous organizations.

- Eugene Schneller (Ph.D. New York University), Professor. His primary research stream focuses on strategic management for the health sector supply chains and encompasses issues in group purchasing organization/collaborative purchasing, design of health sector distribution models, supplier organization integration and trust, in and out-sourcing of key supply chain functions, health care system design, integrity in purchasing and positioning of the supply chain function and the impact of physicians and other clinicians on supply chain pertaining to cost, quality and outcomes. Dr. Schneller's research employs both qualitative and quantitative methods to explore key hypothesis – with a strong focus on hypothesis development around unique health sector issues. His work is comparative, scrutinizing supply chains in the US, Canada, United Kingdom, EU and Australia. His work has appeared in both supply chain journals as well as health policy and management journals. Schneller is Director of the Health Sector Supply Chain Research Consortium, and Industry Advisory Group within CAPS Research. The Consortium is engaged in “translational” research – bringing the best practices from outside of the health sector into the health sector. The Consortium membership provide a unique access to major distributors, group purchasing organizations, suppliers and information technology intermediaries. Dr. Schneller is also involved in studies pertaining to supply chains in evolving nations through the U.S. Agency for International Development (USAID) – especially Africa and Asia. Dr. Schneller has lectured at Universities across the globe including Imperial College (London), Bocconi University, University of Porto and the Shanghai National Accounting Institute. He has held faculty positions and/or visiting research scholar roles at Duke University, Columbia University, University of Colorado and Imperial College
- Adegoke Oke (Ph.D., Cranfield University, UK), Associate Professor. His main research interests are in the areas of innovation in supply chains and networks, supply chain risk management, flexibility and managing global supply chains that include developing economies. His publications have appeared in the *Journal of Operations Management*, *Decision Sciences*, *Journal of Supply Chain Management*, *International Journal of Operations & Production Management*, *International Journal of Production Economics*, *International Journal of Production Research*, *Journal of Purchasing and Supply Management*, *Organizational Dynamics* and *Journal of Applied Psychology* among others. He is a UK AIM Scholar, an Associate Editor of the *Journal of Operations Management* and an editorial review board member of the *Journal of Supply Chain Management* and *Journal of Manufacturing Technology Management*. Dr Oke has done research and taught in the UK, Malaysia, South Korea, Nigeria, Ghana, Spain and South Africa. Prior to a career in academia he held senior positions at Shell for over 8 years.
- Joe Van Orden (Ph.D., University of Utah), Assistant Dean of Academic Affairs. Joined ASU in 2014. Dr. Van Orden's research interests are Service and Quality Management in Healthcare, Improving Hospital Supply Chains, Innovation in the Supply Chain, Lean Management, and the Operations/Accounting interface. Dr. Van Orden has published in the *Journal of Business Logistics*, *Journal of Product Innovation Management*, and CAPS Research. Dr. Van Orden has 10 plus years of work experience in the chemical supply chain industry, designing supply chains for companies like Intel, Micron, and Entegris. He has worked in Taiwan, Korea, China, Israel, and other countries. He continues to consult with companies looking to improve their supply chains in both health care and chemical logistics.
- Mikaella Polyviou (Ph.D., The Ohio State University), Assistant Professor. Joined ASU in 2016. Her primary research interests focus on supply chain risks and disruptions, and involve managerial and organizational responses to supply chain disruptions, behavioral biases arising from supply chain disruptions, and strategies and capabilities to improve organizational resilience. She is also interested in issues of conceptual clarity and measurement in empirical supply chain management research

- William Verdini (D.B.A., Kent State University), Professor Emeritus. Joined ASU in 1976. Dr. Verdini serves on the Boards of Directors the Better Business Bureau of Central/Northern Arizona and All Saints' Episcopal Day School. He has also served on the Board of the Arizona Technology Incubator, the ASU Business Dean's Board of Excellence and the Arizona Small Business Development Network Board. In 1999 when he directed the ASU Center for the Advancement of Small Business, Dr. Verdini was recognized by the Business Journal as one of the Valley's "Most Influential" people in the small business category. He has also served as the Interim Dean and Associate Dean of the ASU College of Extended Education. Dr. Verdini has published in the *American Compensation Association Journal*, *American Journal of Mathematical and Management Sciences*, *The American Statistician*, *Computers & Industrial Engineering*, *Decision Sciences*, *European Journal of Operational Research*, *Management Science*, *Operations Research* and others.
- Yimin Wang (Ph.D., University of North Carolina, Chapel Hill), Associate Professor. Joined ASU in 2007. His research focuses on operational risk management strategies, particularly in the global supply chain management area. His current research investigates mitigation strategies and operational recourses under unreliable supply. In particular, his recent research studies risk mitigation strategies under frequently encountered challenges in global operations, including the lead-time risk, capacity risk, and regulatory trade barriers risk. Prior to UNC, Dr. Wang held several professional roles, including analytical consultant at SAS Institute and project leader for Canadian Airlines International. He received his MBA degree from the University of British Columbia.
- Scott Webster (Ph.D., Indiana University), Bob Herberger Arizona Heritage Chair and Professor of Supply Chain Management. Prior to joining ASU in 2013, Dr. Webster was the Steven Becker Professor of Supply Chain Management at the Whitman School of Management of Syracuse University where he served as co-director of the H. H. Franklin Center for Supply Chain Management. He has worked in industry in the areas of consulting and corporate finance. His current research focuses on modeling risk and uncertainty in supply chains. His work has appeared in such journals as *Journal of Operations Management*, *Management Science*, *Manufacturing & Service Operations Management*, *Operations Research*, and *Production and Operations Management*, among others. He is the author of the text *Principles of Supply Chain Management*. He is a Senior Editor for *Production and Operations Management*, on the editorial board of *Journal of Business Logistics*, he served as an Associate Editor for *Decision Sciences*, and he has served on the editorial boards of *Journal of Operations Management*, and *Manufacturing & Services Operations Management*.
- Robert Wiedmer (Ph.D., Michigan State University), Assistant Professor. He joined the Supply Chain Management Department in 2016. Prior to his doctoral studies, Dr. Wiedmer worked as a post-graduate research assistant in shipping economics at the Cyprus University of Technology. He earned a graduate degree in business and engineering (Dipl.-Wi.-Ing.) at the Dresden University of Technology in Germany and a Master in Business Logistics Engineering (MBLE) at The Ohio State University. Dr. Wiedmer's current research areas focus on buyer-supplier relationships, the effects of environmental changes, such as resource scarcity, in supply chains, supply chain network design and its association to supply chain performance. His research has appeared in *Journal of Supply Chain Management*, *Research in Transportation Economics*, and book chapters
- Rui Yin (Ph.D., University of California, Los Angeles), Associate Professor. Joined ASU in 2007. Dr. Yin's current research interests include inventory management, revenue management and marketing-operations interface in retailing. She has published articles in *Decision Sciences*, *Management Science*, *Production and Operations Management*, among others.
- Heng Zhang (Ph.D., University of Southern California), Assistant Professor. Joined the Supply Chain Management Department in 2020. Heng Zhang's research focuses on the theory and applications of

choice modeling, and its applications in revenue management in a broad sense. He applies game-theoretic modelling, data mining, information technology, large-scale optimization and nonparametric algorithms to guide decision making in revenue management. Besides, he is also interested in field experiments and data-driven optimization methods such as multi-arm bandit algorithms. He has published several articles on *Management Science* and *Operations Research*.

V. COURSE DESCRIPTIONS

The following is a list of courses from different schools and departments that may be of interest to SCM PhD students. Please visit <https://webapp4.asu.edu/catalog/> for the most up-to-date course descriptions and schedule of offerings.

Agribusiness

AGB 701 – Advanced Agribusiness I: Advanced Agribusiness Analysis

- Advanced topics include benefit-cost analysis, input-output analysis, consumer demand, agricultural policy, international trade, welfare economics and applied mathematical economics.

AGB 702 – Agribusiness II: Applied Econometrics

- Econometric analysis techniques applied to multinomial and count models, welfare economics, demand models and maximum likelihood estimation using STATA.

AGB 703 – Advanced Agribusiness III: Advanced Empirical Models

- Microeconomics applied to empirical models involving agribusiness including consumer and producer theory, empirical industrial organization, strategic choice and price behavior.

Computer Science

CSE 550 – Combinatorial Algorithms and Intractability

- Combinatorial algorithms, nondeterministic algorithms, classes P and NP, NP-hard and NP-complete problems, and intractability. Design techniques for fast combinatorial algorithms.

CSE 556 – Game Theory with Applications to Networks

- Strategic conflict as matrix games, notions of equilibrium, definition and existence of Nash equilibrium, zero-sum games, extensive-form games, Bayes Nash equilibrium, potential games, routing games, algorithmic game theory, computation of Nash equilibrium, incentives and pricing in communication networks, application of game theory in wireless networks. Knowledge of calculus, discrete mathematics, probability theory and algorithms is necessary to be successful in this course.

CSE 561 – Modeling and Simulation Theory and Application

- Modeling theories, simulation protocols, object-oriented modeling, model design, simulation analysis, network-based systems, discrete-event modeling, continuous modeling, hybrid modeling.

CSE 569 – Fundamentals of Statistical Learning and Pattern Recognition

- Concepts of statistical pattern recognition, Bayesian decision theory, parameter estimation, discriminant analysis, basics of artificial neural networks, basics of data clustering. Knowledge of college-level calculus, linear algebra, basic probability theory and proficiency in computer programming is necessary to be successful in this course.

CSE 572 – Data Mining

- Advanced data mining techniques: classification, clustering, association, preprocessing; performance evaluation; information assurance, Web mining, security and privacy issues, and other applications. Students must have a solid background in database management systems, search, learning, and statistics to be successful in this course.

CSE 573 – Semantic Web Mining

- Data mining techniques for structuring and organizing unstructured sources such as text and Web data into meaningful machine-processable information; computational aspects of information extraction and data linkage; discovery and prediction tasks where text serves as data such as detecting events, measuring public opinion and making recommendations. A background in databases, algorithms and theory of computation is necessary to be successful in this course.

CSE 576 – Topics in Natural Language Processing

- Comparative parsing strategies, scoping and reference problems, nonfirst-order logical semantic representations, and discourse structure.

Economics

ECN 510 – Microeconomic Theory and Applications

- Applies economic theory to production, consumer demand, exchange, and pricing in a market economy.

ECN 525 – Applied Regression Models

- Simple linear regression, multiple regression, indicator variables, and logistic regression. Emphasizes business and economic applications.

ECN 527 – Categorical Data Analysis

- Discrete data analysis in business research. Multidimensional contingency tables and other discrete models.

ECN 712 – Microeconomic Analysis I

- Theory of production, consumer demand, resource use, and pricing in a market economy.

ECN 714 – Microeconomic Analysis II

- General equilibrium, welfare economics, production, and capital theory.

ECN 715 – Advanced Microeconomic Analysis

- Focuses on current research areas in macroeconomics and monetary theory with emphasis on methods in economic dynamics and numerical techniques. Prerequisites: ECN 711 with C or better; ECN 713 with C+ or better

ECN 716 – Advanced Economic Theory I

- Economic behavior under uncertainty; markets and contracts under asymmetric information; the theory of games with incomplete information and applications. Prerequisites: ECN 714 with C or better; ECN 712 with C+ or better

ECN 725 – Econometrics I

- Problems in the formulation of econometric models. Emphasizes estimation, hypothesis testing, and forecast of general linear models.

ECN 726 – Econometrics II

- Estimation and inference of qualitative and limited dependent variable models as well as general multiple equation models. Prerequisites: ECN 725 with C+ or better

ECN 753 – Industrial Organization

- Analyzes structure, conduct, and performance in industrial markets; the economics of organizations. Prerequisites: ECN 713 and 714 with C or better

ECN 770 – Mathematics for Economists

- Surveys mathematical ideas encountered in economics and econometrics. Topics include measure theory, probability theory, and mathematical statistics.

Industrial Engineering

IEE 376 – Operations Research Deterministic Techniques/Applications

- Industrial systems applications with deterministic operations research techniques. Resource allocation, product mix, production, transportation, task assignment, networks. Prerequisites: CSE 205 with C or better; MAT 242, 342 or 343 with C or better; or Industrial Engineering graduate student.

IEE 470 – Stochastic Operations Research

- Modeling and analysis with emphasis on stochastic operations research. Models for stochastic processes, including Markov chains, queueing and decision analysis. Prerequisites: Industrial Engineering, Engineering Management or Computer Science undergraduate; IEE 376 and IEE 385 with C or better; or Industrial Engineering graduate student.

IEE 520 – Statistical Learning for Data Mining

- Course description: Surveys data analysis methods for massive data sets and provides experience in analysis with computer software. Prerequisite(s): BMI 515 or IEE 572 or IEE 578; Credit is allowed for only BMI 555 or IEE 520

IEE 534 – Supply Chain Modeling/Analysis

- Techniques for modeling and analysis of supply chains. Inventory management, transportation/location models, value of information, channel alignment, risk pooling, contracts. Prerequisites: CSE 100 or 110, IEE 574, and IEE 470.

IEE 545 – Simulating Stochastic Systems

- Analyzes stochastic systems using basic queuing networks and discrete event simulation. Basic network modeling, shared resources, routing, assembly logic. Credit is allowed for only IEE 545 or 475. Prerequisites: CSE 205 and IEE 376; Co-requisites: IEE 470

IEE 572 – Design Engineering Experiments

- Analysis of variance and experimental design. Topics include strategy of experimentation, factorials, blocking and confounding, fractional factorials, response surfaces, nested and split-plot designs. Prerequisite: IEE 380.

IEE 574 – Applied Deterministic Operations Research

- Develops advanced techniques in operations research for the solution of complex industrial systems problems. Goal programming, integer programming, heuristic methods, dynamic and nonlinear programming. Prerequisites: Industrial Engineering MS, MSE, or PhD student.

IEE 575 – Applied Stochastic Operations Research

- Formulate and solve industrial systems problems with stochastic components using analytical techniques. Convolution, continuous-time Markov chains, queues with batching, priorities, balking, open/closed queuing networks. Prerequisites: Industrial Engineering MS, MSE, or PhD student.

IEE 578 – Regression Analysis

- Regression model building oriented toward engineers and physical scientists. Topics include linear regression, diagnostics, biased and robust fitting, nonlinear regression. Prerequisites: IEE 380.

IEE 620 – Optimization I

- First course of the Ph.D. level deterministic course series. This course covers foundations of optimization and linear programming. Prerequisites: MAT 272, 242, and IEE 376.

IEE 622 – Optimization II

- The course is a second graduate course of optimization. In this course, we introduce computational methods to solve optimization problem with integer variables efficiently as well as the mathematical theory. Pre-requisite: MAT 242 and IEE 376

IEE 640 – Probability and Stochastic Processes

- Presents fundamentals of probability and stochastic processes from a non-measure theoretic point-of-view to develop (a) basic model building and probabilistic reasoning skills, and (b) an understanding of important qualitative characteristics of some basic stochastic processes used to model dynamical systems with noise. Topics include a review of probability theory with particular attention to conditional probability and expectation; Markov chains; Renewal theory and the Poisson process. Considers applications in reliability, inventory theory, queuing. Pre-requisites: MAT 242, IEE 376 & 470

IEE 670 – Mathematical Statistics

- This course is an introduction to the field of mathematical statistics at a level intended for first-year Ph.D. students in Industrial Engineering. It builds a solid background in the principles, concepts and techniques of mathematical statistics. The class prepares students for advanced study and research in statistics, and is useful for understanding statistical data analysis techniques and developing statistical thinking. Prerequisites: IEE 380

IEE 672 – Adv Topics-Experimental Design

- Multilevel and mixed-level factorials and fractions, design optimality, incomplete blocks, unbalanced designs, random effects and variance components, analysis of covariance. Must be an Engineering MS//PHD student AND have completed with a C or better IEE 572 or be currently enrolled.

IEE 691 – Stochastic Dynamic Programming

- A small class emphasizing discussion, presentations by students, and written research papers.

Mathematics and Probability

APM 504 – Applied Probability and Stochastic Processes

- Markov chains, Martingales, probability measures, SDE, Brownian motion, Monte Carlo methods.

APM 598 – Mathematical Modeling

- Topical courses not offered in regular course rotation--e.g., new courses not in the catalog, courses by visiting faculty, courses on timely topics, highly specialized courses responding to unique student demand.

MAT 570 – Real Analysis I

- Lebesgue integration, selected function spaces, differentiation, abstract measure theory, and elements of functional analysis.

MAT 571 – Real Analysis II

- Continuation of Lebesgue integration, selected function spaces, differentiation, abstract measure theory, and elements of functional analysis.

Psychology

PSY 530 – Intermediate Statistics

- One-way and factorial designs, contrasts, post-hoc tests, probing of interactions, mixed designs, power, computer applications.

PSY 531 – Multiple Regression in Psychological Research

- Multiple regression and correlation, hierarchical regression, interactions, curvilinear relationships, categorical predictors, ANOVA in regression, regression diagnostics, regression graphics.

PSY 532 – Analysis of Multivariate Data

- Matrix algebra for multivariate procedures, component and factor analysis, canonical and discriminant analysis, classification, MANOVA, logistic regression, hierarchical linear model.

PSY 533 – Structural Equation Modeling

- Path analysis; exploratory and confirmatory factor analysis; recursive and nonrecursive latent variable models; mean and covariance structures; latent growth models.

PSY 534 – Psychometric Methods

- Theory and practice of psychological measurement using classical and modern test theories. Reliability assessment, test validation, test construction, test usage.

PSY 537 – Longitudinal Growth Modeling

- Growth modeling methodology to describe individual variation in development over time. Employs multilevel and structural equation modeling frameworks.

PSY 539 – Multilevel Models for Psychological Research

- Multilevel (i.e., hierarchical linear) modeling, as described by Raudenbush and Bryk (2002) and others. Covers analytic strategies for analyzing a variety of different nested data structures (e.g., couples data, clients nested within group therapy settings, children nested within classrooms, longitudinal data). Covers two- and three-level models for cross-sectional and longitudinal data and also addresses related topics such as centering and estimation. Students perform and interpret the results of these models using a variety of statistical software packages.

PSY 540 – Missing Data Analysis

- Covers analytic strategies for analyzing data with missing values, with a special emphasis on modern approaches for dealing with missing data, in particular maximum likelihood missing data handling and multiple imputation, maximum likelihood estimation and multiple imputation. Familiarizes students with missing data theory, traditional analysis methods (e.g., deleting incomplete cases, single imputation methods), maximum likelihood estimation, multiple imputation, planned missing data research designs, and the inclusion of auxiliary variables. Students learn how to perform and interpret the results of these models using a variety of statistical software packages.

PSY 543 – Statistical Mediation Analysis

- Specifically covers the substantive motivations for mediating variables and third-variable effects (interaction, confounder, covariate and mediator) in general. Mediation represents a chain such that

one variable causes a mediating variable and the mediating variable causes a dependent variable. Describes the single mediator model in detail including assumptions, estimators and geometric interpretations. Once the details of the single mediator model are understood, analysis is extended to multiple mediator models, path analysis, and models with moderators and mediators. Discusses modern causal inference approaches for mediation along with latent variable models, multilevel models and special models for longitudinal data. Also describes research designs for investigating mediating variables. Students learn how to perform and interpret the results of analysis using a variety of statistical software packages. Prerequisites: PSY 530; PSY 531

PSY 555 – Experimental and Quasi-Experimental Designs for Research

- Reviews research techniques. Analyzes lab and field research; applications to specific topics.

Statistics

STP 527 – Statistical Large Sample Theory

- Types of convergence, central limit theorems, theory of maximum likelihood estimation, efficiency, robustness, influence functions, theory of bootstrap methods.

STP 530 – Applied Regression Analysis

- Method of least squares, simple and multiple linear regression, polynomial regression, analysis of residuals, dummy variables, and model building.

STP 531 – Applied Analysis of Variance

- Factorial designs, balanced and unbalanced data, fixed and random effects, randomized blocks, Latin squares, analysis of covariance, and multiple comparisons.

STP 532 – Applied Nonparametric Statistics

- One-sample test, tests of 2 or more related or independent samples, measures of correlation, and tests of trend and dependence.

STP 533 – Applied Multivariate Analysis

- Discriminant analysis, principal components, factor analysis, cluster analysis, and canonical correlation.