

## **SCM.283 [SCM.284] Humanitarian Logistics**

### **Spring 2020**

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**Office:** E40-267 (office hour signup <https://goo.gl/yPA871>)

**Course website:** <http://stellar.mit.edu/S/course/SCM/sp19/SCM.283>

**Teaching Assistant:** TBD

**MIT Units:** 2-0-4 [3-0-9]

**Class Sessions:**

MW 4:00-5:30pm; MIT Room E51-149 (H3)

[M 4:00-5:30pm; MIT Room E51-149 (H4)]

### **COURSE OBJECTIVES**

Logistics management plays a key role in responding to humanitarian crises stemming from events such as natural disasters, armed conflicts, epidemics, and famine. Supply chains also provide the backbone for sustainable international development that strengthens markets, which are better positioned to meet community needs during crisis. This course explores how logistics management principles apply in dynamic, resource-constrained contexts.

Lectures on core concepts are presented through online videos. Class sessions reinforce and apply the lecture content through practical exercises, discussion of case studies, and interaction with guest speakers. Time outside class sessions consists of watching lectures, reading material and completing exercises to prepare for class, and completing individual and group assignments. The course is designed to accommodate students from various backgrounds, including those with limited supply chain or limited humanitarian experience.

The course aims to provide students with the following:

- An overview of humanitarian operations by introducing the context in which they take place, the products and services needed, and the the systems that aim to meet these needs.
- Introduction to logistics systems and fundamental supply chain concepts and approaches, with a focus on planning.
- Practice applying these supply chain concepts and approaches in the humanitarian context, with a focus on communicating plans and policies.

## REFERENCE TEXTS

- [MG] Maxwell, D. G. and Gelsdorf, K. H. *Understanding the Humanitarian World*. Routledge, 2019.
- [PAHO] Pan American Health Organization. Humanitarian Supply Management and Logistics in the Health Sector. Washington, D.C., 2001. Download: [www.paho.org/English/PED/HumanitarianSupply.pdf](http://www.paho.org/English/PED/HumanitarianSupply.pdf)
- [LOG] Logistics Operational Guide. Logistics Cluster. <http://www.logcluster.org> (2015: <http://dlca.logcluster.org/display/LOG>)
- [SKS] Simchi-Levi, D., P. Kaminsky and E. Simchi-Levi. Designing and Managing the Supply Chain: Concepts, Strategies and Case Studies. McGraw-Hill (pages below reference the 3rd Edition, 2008).
- [CM] Chopra, S. and P. Meindl. Supply Chain Management: Strategy, Planning & Operation. Pearson Prentice Hall (pages below reference the 3rd Edition, 2007).
- [SPT] Silver, Pyke, Thomas. Silver, E. A., D. F. Pyke, and D. J. Thomas. *Inventory and production management in supply chains*. CRC Press, 2016.

## SCHEDULE

Session	Date	Session	Date
1	3-Feb-20	2	5-Feb-20
3	10-Feb-20	4	12-Feb-20
5	18-Feb-20	6	19-Feb-20
7	24-Feb-20	8	26-Feb-20
9	2-Mar-20	10	4-Mar-20
11	9-Mar-20	12	11-Mar-20
		13	1-Apr-20

### SESSION 1 – Course Intro

- Class introductions
- Review syllabus
- Review course website and video portal
- Preview assignments and exercises, including the final group project
- [Begin Initial Exercise: Response Template Planning](#)

### SESSION 2 – Humanitarian Context and Humanitarian Systems

*(Guest lecturer: Daniel Maxwell, Henry J. Leir Professor in Food Security, Tufts Feinstein International Center and Tufts Friedman School of Nutrition Science and Policy)*

- Daniel G. Maxwell and Kirsten Heidi Gelsdorf (2019). *Understanding the Humanitarian World*. Routledge. [\(Introduction, Chapters 4-5\)](#)
- ALNAP (2018). *The State of the Humanitarian System*. ALNAP Study. London: ALNAP/ODI Supplemental
- Michael Barnett. “Humanitarianism Transformed,” *Perspectives on Politics*, 2005, Vol. 3, pp. 723-740.
- Mark Duffield. “Getting savages to fight barbarians: development, security and the colonial present,” *Conflict, Security & Development*, 2005, Vol. 5, pp. 141-159.
- Peter Walker. “Cracking the Code: The Genesis, Use and Future of the Code of Conduct,” *Disasters*, 2005, Vol. 29, pp. 323–336.
- Luk van Wassenhove. “Blackett Memorial Lecture: Humanitarian aid logistics: supply chain management in high gear,” *Journal of the Operational Research Society*, 2006, 57, 475-489.

### SESSION 3 – Demand Planning I (Needs Assessment)

*(Guest lecturer: Stephanie Kayden, Associate Professor, Harvard T.H. Chan School of Public Health and Harvard Medical School)*

- [PAHO] [\(Chapters 1-3, 5\)](#)
- Darcy, J. and C. Hofmann. “According to Need? Needs assessment and decision-making in the humanitarian sector.” Humanitarian Policy Group Report 15. Overseas Development Institute. London. September 2003. [\(Chapters 2-3\)](#)

Supplemental

- Sphere Association (2018). *The Sphere Handbook: Humanitarian Charter and Minimum Standards in Humanitarian Response*, fourth edition, Geneva, Switzerland. Available at: [www.spherestandards.org/handbook](http://www.spherestandards.org/handbook)
- Young, Helen et. al. "Food-security Assessments in Emergencies: A Livelihoods Approach." Overseas Development Institute, HPN Paper 36, June 2001.
- Checchi, Francesco, Michelle Gayer, Rebecca Freeman Grais, and Edward J. Mill. "Public Health in crisis-affected populations: A practical guide for decisions makers," HPN Paper 61. London, Overseas Development Institute, December 2007.
- Y. Yang, J. Van den Broeck, and L.M. Wein. "Ready-to-use food-allocation policy to reduce the effects of childhood undernutrition in developing countries." PNAS, Vol. 110, No. 12, 4545-4550, doi: 10.1073/pnas.1216075110.
- M.A. Zissman, M. Shattuck, E. Gralla, L.C. Ivers, and J. Goentzel. "Development and Use of a Comprehensive Humanitarian Assessment Tool in Post-Earthquake Haiti." *Proceedings of 2014 Humanitarian Technology: Science, Systems, and Global Impact Conference*. June 2014.
- Gralla, E, Goentzel, J., and Van de Walle, B. "Understanding the information needs of field-based decision-makers in humanitarian response to sudden onset disasters." *Proceedings of the ISCRAM 2015 Conference*, May 24-27, 2015.
- Gralla, E., Goentzel, J., Van de Walle, B. "Report from the Workshop on Field-Based Decision Makers' Information Needs in Sudden Onset Disasters." October 2013. Available at: [https://www.academia.edu/19454748/Report\\_from\\_the\\_Workshop\\_on\\_Field-Based\\_Decision\\_Makers\\_Information\\_Needs\\_in\\_Sudden\\_Onset\\_Disasters](https://www.academia.edu/19454748/Report_from_the_Workshop_on_Field-Based_Decision_Makers_Information_Needs_in_Sudden_Onset_Disasters)

**SESSION 4 – Demand Planning II (Forecasting)**

- [Exercise: Hurricane Forecast](#)
- "Early Warning, Early Action: An Evaluation of IFRC West and Central Africa Zone Flood Preparedness and Response," International Federation of Red Cross and Red Crescent Societies, 2008.
- [SKS] [2.7, 6.1-6.4](#)

Supplemental

- [CM] [7.1-7.4, 7.8-7.10](#)

**SESSION 5 – Warehousing and Material Handling**

- [PAHO] [Chapters 8-9](#)

Supplemental

- J. Bartholdi and S. Hackman. Warehouse & Distribution Science. Available online: <http://www.warehouse-science.com/>.
- [LOG] Warehousing and Inventory Management

**SESSION 6 – Supply Planning I (Procurement)**

- [Exercise: Hurricane Order](#)

Supplemental

- UN Procurement Practitioner's Handbook (2017). United Nations High Level Committee on Management, Procurement Network (HLCM-PN): <https://www.ungm.org/Shared/KnowledgeCenter/Pages/PPH2>
- [LOG] Procurement section

### SESSION 7 – Supply Planning II (Pre-Positioning)

- [SKS] 2.1-2.6
- [PAHO] Chapter 6

#### Supplemental

- Acimovic, J., & Goentzel, J. (2016). Models and metrics to assess humanitarian response capacity. *Journal of Operations Management*, 45, 11-29.

### SESSION 8 – Supply Planning III (Replenishment)

- Exercise: Hurricane Replenishment Policy
- [SKS] 2.1-2.6

#### Supplemental

- [CM] 10.1-10.2 (cycle stock), 11.1-11.2 (safety stock basics), 11.3-11.8 (safety stock considerations); 14.1-14.2 (sourcing, outsourcing), 14.4 (supplier evaluation)

### SESSION 9 – Transportation Planning I

- [PAHO] Chapter 7, Chapter 10
- [CM] 13.1-13.2 (modes), 13.5 (transport-inventory tradeoff), 13.7-13.9 (IT, risk)

### SESSION 10 – Transportation Planning II

- Exercise: Carrier Bidding
- Supee Teravaninthorn and Gaël Raballand. *Transport Prices and Costs in Africa: A Review of the International Corridors*. World Bank, Washington, DC. Available at <https://openknowledge.worldbank.org/handle/10986/6610> “Transport Costs Determinants,” Chapter 6, pp. 63-77

#### Supplemental

- Rancourt, M., F. Bellavance and J. Goentzel. “Market analysis and transportation procurement for food aid in Ethiopia.” *Socio-Economic Planning Sciences*, Volume 48, Issue 3, pages 198–219, September 2014. doi:10.1016/j.seps.2014.07.001.

### SESSION 11 – Coordination and Prioritization

- Exercise: MountainLand
- Inter-Agency Standing Committee (IASC). “Guidance Note on Using the Cluster Approach to Strengthen Humanitarian Response,” 24 November 2006. (<http://interagencystandingcommittee.org/node/7059>)

#### Supplemental

- Inter-Agency Standing Committee (IASC). “IASC Reference Module for Cluster Coordination at the Country Level,” 13 August 2015. ([https://www.humanitarianresponse.info/en/system/files/documents/files/cluster\\_coordination\\_reference\\_module\\_2015\\_final.pdf](https://www.humanitarianresponse.info/en/system/files/documents/files/cluster_coordination_reference_module_2015_final.pdf))
- Gralla, E., Goentzel, J. and Fine, C. “Assessing Trade-offs among Multiple Objectives for Humanitarian Aid Delivery Using Expert Preferences.” *Production and Operations Management*, Volume 23, Issue 6, pages 978–989, June 2014. doi: 10.1111/poms.12110.
- Gralla, E., Goentzel, J. and Fine, C. “Problem formulation and solution mechanisms: a behavioral study of humanitarian transportation planning.” *Production and Operations Management*, Volume 25, Issue 1, pages 22–35, January 2016. doi: 10.1111/poms.12496.

**SESSION 12 – UNICEF RUTF Case**

- [Assignment: UNICEF RUTF Case](#)
- Jayashankar Swaminathan. “UNICEF RUTF Supply Chain (A): Crisis in Horn of Africa,” July 2009, revised December 2014.
- Jarrod Goentzel and Jayashankar Swaminathan “UNICEF RUTF Supply Chain (B): Developing a Global Supply Network,” January 2015.
- Note: questions for preparation posted on the course website.

**SESSION 12 – TBC (e.g. guest speaker, supplemental case study)**

**SESSION 13 – Group Assignment Presentations and Discussion**

- [Group Assignment writeup due several days before presentations](#)

## **COURSE REQUIREMENTS AND GRADING**

Overall note: Often there is not a single correct answer to the exercises and writeups. I am interested in your thinking. I want to help you develop skills and intuition. Sometimes this means more focus on asking the right questions and communicating your thought process than on getting the right answer. I will let you know when the assumptions are more rigid and the right answer is more critical. Otherwise, feel free to challenge assumptions and make further assumptions, as long as you communicate them clearly and connect them with class concepts. Embrace the unique aspects of the humanitarian context and be creative...but be sure to defend your assumptions and answers.

### **Individual Assignments (40%)**

Three individual assignments and one quiz will be given during the course.

### **Group Assignment (30%)**

You will work in a group on a comprehensive assignment based on a practical scenario. The basic structure of the assignment will be the same for each group. Specific information about the assignment will be distributed during the course.

### **Individual Exercises (20%)**

We will use a combination of Pre-Lecture exercises in preparation for class and In-Class exercises to practice applying logistics concepts in humanitarian situations. These exercises will not be graded for correctness but will be evaluated to ensure that the work reflects thoughtful effort and appropriately fulfills the exercise requirements.

### **Classroom Participation (10%)**

It is essential that you come to class prepared to share your insights and analysis with others. Students will be evaluated on the quality (not the quantity) of the contributions. The criteria used to determine the quality of participation includes:

1. Does the participant listen well and comment on others' perspectives in a constructive manner?
2. Are the points made relevant to the current discussion? Are they linked to others' comments?
3. Do the comments demonstrate appropriate and insightful analysis of readings/cases (in contrast with simply restating information from the reading/case)? Do they present a clearer statement of the relevant concepts and issues, extend earlier ideas, and/or offer new ideas?
4. Did the participant integrate concepts from prior classes and assigned readings into current discussion where possible?

## **FINAL COMMENTS**

- You will follow all standards established in MIT's academic honesty policy. See <http://web.mit.edu/policies/10/index.html>.
- It is best to attempt the case preparation and assignments on your own first. Unless stated otherwise for an assignment, talking with your classmates is encouraged once you have made an individual effort. The content submitted for the assignment must be your own work, or group work if called for.
- During class, please turn off distracting electronic devices such as phones. Use laptop computers in the classroom only when needed for course related purposes. In other words, the discussion stays in the room.
- Please ask for help. Assignments are a late indicator of difficulty with material. Make an appointment with the instructor and/or the TA to discuss any topics/problems as you encounter them during the course.

**Supplement: SCM.284 Humanitarian Logistics with Project****MIT Units:** 3-0-9 (incorporating credit and evaluation from ESD.283)**LIMITED ENROLLMENT – Permission of the instructor only**

With permission of the instructor, you can conduct an additional independent study project, individually or in a small group, aimed to drive innovation and improvement in humanitarian response. The project will utilize data and information directly from sources such as the UN, national government agencies, NGOs, and/or the private sector. The goal is to better diagnose issues in the response operations you study and to identify ways to improve humanitarian outcomes in the future. The deliverables are:

- Submit a written report summarizing your results and proposing recommendations to improve future disaster responses.
- Submit electronically any supporting dataset and analysis files.
- Prepare a discussion of your report for the final class session. You may use powerpoint slides to present the project, but it is not required.

To receive credit for this additional project, you must register only for SCM.284 (3-0-9) and complete all of the requirements for SCM.283 along with the project for a combined 12 units. Two-thirds of your grade is based on the grading system for SCM.283; one-third consists of a grade for the independent study project.

Session	Date
1	30-Mar-20
2	6-Apr-20
3	13-Apr-20
HOLIDAY	20-Apr-20
4	27-Apr-20
5	4-May-20