DEMS 3702 – Comprehensive Emergency Management
Dr. Eric Kennedy – Learning Goals

Week 1: Emergency Management as Knowledge Management

- Define 'epistemology' and explain how it relates to the role of an emergency manager.
- Define 'a knowledge system' and its core processes: generation, validation, circulation, and application. Explain how the role of these processes in each phase of emergency management (mitigation, preparedness, response, recovery).
- Analyze a real, prospective, or hypothetical emergency to explain what emergency managers would need to consider in each process during each phase.
- Articulate at least two examples of knowledge systems failures in each process and phase.
- (Note: this learning goal will not be completed today, but requires synthesis between weeks.) Identify how emergency exercises, CEMPs, AARs, EOCs, IMTs, predictive models, NGOs, governments, and insurance firms can experience knowledge systems failures in each process. Describe how each knowledge system process can be designed robustly/successfully to improve outcomes.

Week 2: EM in Canada – History, Laws, and Jurisdictions

- Identify significant key historical disasters that have driven the development of emergency management in Canada. Be able to explain what their influence was. Articulate the distinct influences of 'natural' and 'security' type emergencies over the evolution of emergency management in Canada, as well as how – and why – the American models look different. Link how this evolution is connected to the idea of 'knowledge systems' and 'epistemology' discussed last week.
- Be able to describe the War Measures Act, the Emergencies Act, the Emergency Preparedness Act, and Emergency Management Act and how they shape emergency management in Canada.
- Compare the content of federal and provincial emergency measure acts.
- Know about the five national, contemporary Canadian acts/programs related to EM. Be able to explain how they evolved to their current form, articulate their unique purposes, and explain their durability/permanence.
- Describe how jurisdictional issues play out with respect to who owns what hazards, using the examples of flooding and wildfire. Articulate how federal, provincial, and municipal responsibilities differ on emergency-related topics.
- Be able to identify all significant federal, provincial, and local agencies involved in emergency management and their respective functions as related to DEM.
- Using the example of the 2013 flood in High River – or another real or hypothetical example - be able to identify multiple detailed examples of what issues needed to be addressed, what agencies/organizations were involved, and how their roles were interconnected.

Week 3: Mutual Aid & EM Funding

- Explain the importance of coordination in emergency management, and the forms it needs to take before, during, and after an emergency.
- Understand the range of mutual aid arrangements including response vs. backfill; automatic, border zone, and request-based dispatch. Be able to provide and analyze examples of these in action.
- Be able to explain 'cost recovery' and 'reciprocal' approaches to mutual aid. Be able to give an example of each, including moderate detail for how a cost recovery scheme would work.
- Understand the role of Canadian Forces in both acute and ongoing emergency management, as well advantages and disadvantages of this resource compared to others. Explain Operation LENTUS and give several examples of where it has been activated.
- Describe, drawing on examples from Dr. Decerbo, ways that finding funding support for emergency management programs can be challenging – and strategies to overcome these challenges.
- Describe, drawing on examples from Dr. Decerbo, why it can be difficult to advance EM priorities with community groups (e.g., in event planning) and strategies for overcoming these barriers.
- Describe, drawing on examples from Dr. Decerbo, the pros and cons of funding coming in post-event 'waves'.
- Describe, drawing on examples from Dr. Decerbo, why it can be problematic for an outside consulting firm to write a CEMP for the jurisdiction using examples from elsewhere.
- Describe, drawing on examples from Dr. Decerbo, some of the particulars that make emergency management in Providence, RI challenging – and how they work to overcome these as emergency managers (e.g., staffing, day vs. night, location and hazards, relative size, etc).
- From the reading:
    - Explain the problematic record on delivering disaster aid, as well as specific problems arising therein (e.g., that it double-counts existing money; counts loans that increase indebtedness; etc)
    - Explain why – and the impact of – limited funds for redevelopment and rehabilitation.
    - Explain what should be done to improve disaster relief funding globally.
    - Explain why standardized symbols and visual representations are so important. Explain barriers to their use and adoption. Apply this kind of analysis (e.g., would standards be helpful or problematic) to other elements of the EM process, such as equipment or training or public communication).

Week 4: Standards & Comprehensive Emergency Management Plans

- Explain what a standard is, giving several examples from EM.
- Articulate the six types of standards with illustrative examples, explaining each of their advantages and disadvantages.
- Explain the many advantages and disadvantages of standards in general in EM, with specific illustrations/examples. Explain the fundamental tradeoff of standards (local autonomy vs. broader consistency).
- Explain why standards can be so difficult to change, including 'lock in,' local context, and politics.
- Define "comprehensive" and "integrated" (both vertical and horizontal) with respect to CEMPs, explaining why these features are emphasized in EM. Provide examples that illustrate why each are important.
- Explain the purposes of an EMP and the different traits it might be benchmarked against.
- Explain several different – and distinct – ways a CEMP might be organized, with the relative advantages and disadvantages of each.
- Explain the phases of developing a CEMP. Explain the phases of updating a CEMP. Draw on examples and processes from the class, expert visit by Jennifer Yakub, and reading.
- Using the three plans you studied, explain their organization and curatorial decisions. Articulate similarities and differences. Explain common features of most CEMPs, as well as outlier features. Be able to design your own CEMP.
- Discuss the problem – and potential solutions! – of people not reading the plan.
- Using a few examples, discuss barriers that might occur when actually trying to implement the plan (e.g., lack of capacity; gaps in the plan; lack of investment to enable the plan; etc).
- Discuss the debate between those who believe plans should be long and those who believe it should be short. Articulate each position with a strong argument in favour. Discuss the limitations of each. Articulate your view/approach.
- Discuss how the CEMP fits into the network of other kinds of plans.

Week 5: Prediction & Forecasting in EM

- Define prediction, forecast, and models. Explain the 'promise of prediction' as it relates to EM and the many ways that prediction can be useful in an EM context.
- Using simple and complex examples, explain the factors that would go into developing a model.
- Explain why and how prediction was done prior to computational modeling, using the example of the Bay Model and the wildfire Red Book.
- Define, contrast, and explain deterministic versus probabilistic models. Explain the limitations of each approach.
- Define and explain an ensemble forecast, and why looking for consensus is valuable in modeling.
- Explain what a 'spaghetti map' is, how it is produced, and what it represents.
- Explain how and why one model can use the outputs of another model in its own calculations.

- Define and explain spin up and hot starting.
- Explain, with examples, why forecasting and using model outputs is 'more of an art than a science.'
- Explain, and contrast, how models and forecasts can be used in both response and mitigation capacities. Explain pros and cons of each.
- Based on our expert interview,
    - Discuss how incentives differ for private versus public forecasters, with examples.
    - Discuss what inputs are fed into Environment Canada modeling products
    - List some examples of the forecasting products produced by the Meteorological Service
    - Discuss how the Meteorological Service defines success with respect to their models
    - Discuss what it means to shift to 'impact-based' forecasting and how this is being done in Environment Canada
    - Explain why winter and summer forecasting is so different, and how this affects goals and abilities.
    - Provide an illustrative example of where and how data gaps can emerge for weather forecasting.
- For different issues in EM (e.g., weather), explain a range of ways that forecasting can be incorporated into emergency management.
- Discuss why forecasting is more of an 'art' than a science, including the need for domain specific knowledge, the interpretation involved, and mediating differences between user desires and model abilities.

Week 6: Emergency Exercises

- Define drills, TTX, functional, and full scale exercises. Explain what is included in each. Provide examples of each. Differentiate each on the basis of focus (responder versus interagency) and production quality. Explain the advantages and limitations of each.
- Describe the purposes of emergency exercises, including the idea of "pedagogical goals" and validation, testing, and training. Explain how each type of exercise may be aligned with these aims.
- Differentiate between uninterrupted and teaching exercises.
- Define an "MSEL" and produce an example of a minimal and more complete version. Define "inject" and differentiate between push and pull injects.
- Differentiate between tactical and strategic approaches to response.
- Define and explain an "operational period" and an "incident action plan"
- From readings:
    - Explain the four different issues in coordination (planning, plan implementation, communication, and role/task knowledge) and provide an example of each.
    - Define "corrective action plan" and "exercise program." Explain what is included in each.
    - What are the seven key principles of establishing an exercise program? Explain why each is important.
    - Explain the five-phase model of exercises (foundation, design/development, conduct, evaluation, improvement planning)

- Define “exercise scenario”
- Define “hot-wash” and “cold-wash”

Week 7: Public Engagement and EM

- Identify different reasons, both good and bad, that are given for involving the public in emergency management
- Explain epistemic, processual, and persuasive/educational forms of engagement. Explain how they might be deployed in EM and some of the different forms they might take (e.g., town halls, surveys, PSAs, etc).
- Articulate current problems in engagement (e.g., who is represented) with respect to EM and how they might be addressed (e.g., engaging with local leaders to help facilitate engagement processes)

Week 8: After Action Reviews

- Explain why post-event learning is such a critical part of emergency management, and what steps are involved.
  - Define ephemeral data and explain why it needs to be preserved.
- Explain the tradeoff between disclosure and details/distribution
- Explain why lessons from AARs are often not implemented, and explain strategies for doing so.
- Identify the five different modes of post-event learning.
- Define an AAR (and know what it stands for), differentiating between AARs as a practice and AARs as a document.
- Explain the history of AARs, including other methods used prior to the modern AAR.
- Explain why AARs are meant to be about ‘learning’ (and what this means more specifically), and why it’s important to avoid them being punitive.
- Recall the four key questions in an AAR, and be able to both lead and participate in an AAR process.
- Explain why uptake of lessons learned from AARs can be challenging and some strategies for increasing the implementation of lessons learned.
- Articulate the difference between (and relative advantages/disadvantages of) internal and external AARs, and explain what each might be used for.
- Describe the trade-off between openness and blame, and provide creative strategies for managing this.
- Describe when, why, and how (1) coronial inquests, (2) royal commissions, and (3) investigations might occur in the context of EM learning.

POST QUARANTINE CONTENT

Topic 1: Planning Emergency Exercises

- Define what "pedagogical goals" are and give examples of possible organizational and trainee level pedagogical goals of an emergency exercise.
- Articulate why and how the pedagogical goals and design of emergency exercises should be linked to the local context (e.g., risks, priorities, and responsibilities). Describe the four factors for consideration discussed in the reading.
- Explain the 'exercise planning cycle' and why it's important that exercise design be iterative.
- Explain the reasons that exercise design must be considered on a long-term basis, rather than simply as a one-off activity.
- "Practice doesn't make perfect, it makes permanent." Explain this statement and why it's relevant for exercise design.
- Define and differentiate the concepts of realism, fidelity, immersion, and surprise. Explain how they apply to exercise design.
- Explain what is meant by practicing the 'real' task and why this is important.
- Identify some of the non-training benefits of exercises.

Topic 2: Program Evaluation

- Define program evaluation, especially in the context of DEM. Differentiate between AARs and program evaluation.
- Articulate three benefits that come from conducting evaluation, as well as the fourth fake benefit (not really a benefit… be able to explain why it's a problem instead).
- Explain why evaluation is more challenging in DEM than in some other areas.
- Describe three methods of evaluating EM programs: Regulatory/Process compliance, Public confidence/reaction, and Actual response.
- Explain where evaluation can feed into exercise design (as well as the three other factors that can motivate exercise design).