AGRON 615 – Problems in Soil

Semester: Spring 2019
Credits: 1 credit
Student: Pedro Rossini (M.S. in Agronomy)
Supervisor: Dr. Andres Patrignani

1. **Topic:** Introduction to modeling and model-data integration using Matlab.

2. **Goals for the course**
   - Review fundamentals of Matlab coding, data processing and data visualization
   - Learn basic concept of data modeling and data assimilation
   - Implement and optimize antecedent precipitation index (API) though Matlab

3. **Resources**
   1) Mathworks website: https://www.mathworks.com/academia.html?s_tid=gn_acad
   2) Textbook: Working with dynamic crop models. Wallach, Daniel, et al., (2013).
   3) Crow, W.T., 2007. A novel method for quantifying value in space-borne soil moisture retrievals. Journal of Hydrometeorology, 8(1), pp.56-67.
   4) Matlab R2018b.

4. **Format**
   Self-teaching course with weekly assistance from main advisor. Every week I will read new material from the mentioned sources and I will write Matlab code to study and implement models that integrate soil moisture measurements. Matlab code will be used to track and document student progress.

5. **Deliverables**
   I commit to deliver at least three new Matlab functions that simulate soil moisture based on precipitation events and that integrate soil moisture observations. I also commit to track and save all my work using a combination of Matlab scripts with Dropbox.
   I'm compromised to have the discipline to study regularly and methodically to achieve the above-mentioned learning goals.

6. **Grades and policies**
   The grade for this independent study is left to the sole decision of the main advisor according to the accomplishment of the aforementioned objective.

7. **Academic integrity**
   The instructor recognizes the fact that you have learned the benefits and rewards of independent work, especially during examinations. In the unfortunate circumstances that the academic honesty policies of Kansas State University are broken, and appropriate action is needed, it will be handled by stated procedures of the university without delay. Academic dishonesty will not be tolerated.

Pedro Rossini
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Date: 25-Jan-2019

Andres Patrignani
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