**Course Title**: Advanced Animal Nutrition  
**Instructor**: Atsushi TOYODA, Yosuke AOYAGI  
**Code**: MA051100  
**Semester**: 1st (April-)  
**Credit(s)**: 1  
**Day/Period**: Fri, 4  
**Description Code**: A-ALS-612

**Outline**  
The recent progresses in animal nutrition and metabolism in depression models of rodents are lectured by Dr. Toyoda. The characteristics of fat-soluble vitamins such as the physiological action, and deficiency will be looked back. Some topics of the transcriptional controls in nuclear receptors will be offered (Aoyagi).

**Keywords**: depression, fat-soluble vitamins, mouse, nuclear receptors, stress

**Goals**  
Participants are needed to explain the recent progress on nutrition and metabolism in depression. Students can understand that the characteristics of fat-soluble vitamins such as the physiological action, and deficiency at real life level (Dr. Aoyagi).  
Diploma Policy: Academic and research skills in the special field

**Course Plan**  
Dr. Toyoda provides the topics as below,  
1) Impacts of social stress on brain and peripheral tissues  
2) The interaction of social stress and metabolism  
3) Can nutrition rescue psychiatric disorders?  
4) Examination (Test)  
Dr. Aoyagi provides the learning contents as bellow.  
5) The chemistry of fat-soluble vitamins  
6) The physiological action of fat-soluble vitamins  
7) The deficiency of fat-soluble vitamins  
8) The transcriptional control in nuclear receptors

**Advice for Preview and Review**  
The provided papers and review articles in the course should be followed by the participants.

**Prerequisite**  
Participants should read and understand the research articles related to the issue before each class (Toyoda). Students have to review each class with the aid of the related handouts and reference books on nutrition science (Aoyagi).

**Grading Criteria**  
50% as a test (Toyoda) and 50% as a reporting assignment (Aoyagi)

**Texts/References**  
Dr. Toyoda will provide the papers and the reviews related to this course in the first class. Dr. Aoyagi will also provide the handouts at the beginning of each class.