

ANS 6452 – PRINCIPLES OF FORAGE EVALUATION (Spring-2017)
(Section No. 02CF)

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Office hours: By email appointment; open door policy for urgent enquiries only.

Course Prerequisites: ANS 5446 and AGR 4231, or equivalent. It is assumed that students have taken these courses.

Course Description: This **three-credit** course aims to describe the science underlying measurement of forage quality and to discuss the pros and cons of different forage evaluation methods. Such assessments are critical to determining the role and choice of ideal forages in livestock rations, the potential productivity levels of livestock fed forage-based diets, possible health problems that may result from intake of forages, and environmental impacts of forages in livestock diets.

Course Objectives:

1. To provide a fundamental understanding of the definitions, determinants, and indices of forage quality, and its measurement and prediction.
2. To critically appraise different methods of measuring forage quality.

Course Website:

The course website is on the UF e-learning site at <https://lss.at.ufl.edu/>. Log on to the website with your gatorlink username and password. You will find copies of the course outline, syllabus, lectures etc. on the website.

Course Meeting times

Class meets Monday & Wednesday, 7th Period (1.55 – 2.45 pm) in Room 102. We will also meet during 6th period (12.50-1.40 pm) on Thursdays.

Grading scale

A	= 95-100%
A-	= 90-94%
B+	= 85-89%
B	= 80-84%
C+	= 75-79%
C	= 70-74%
D+	= 65-69%
D	= 60-64%
E	< 60%

Final Grade Computation

Assessment	Points
Assignments	20
Exercise 1	75
Exercise 2	25
Mid Semester Exam	90
Debate	100
Final Exam	90
Total	400

There will be no grading curve.

Grades and Grade Points:

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Attendance policy:

All students are strongly encouraged to attend all lectures. Attendance will be taken intermittently during the semester. Prior notice is required if you will be absent from lectures, laboratories or exams. The decision to move final grades that are one point short of the next grade will be largely based on attendance.

Late assignments and exam make up

policy: Unless prior permission for late submission is granted, students will lose five percentage points for each day (including weekends) after the deadline for submission of an assignment expires. Students will be allowed to take make up exams for full marks, only when prior approval was given for absence from the originally scheduled exam / assignment.

Course textbook

There is no course textbook. Students may choose to purchase some of the recommended texts below but they do not have to. In addition to those listed below, outside reading assignments may be announced by the instructor. You will be held responsible for all the material covered in lecture as well as that covered in the reading assignments.

Recommended references

In vitro Screening of Plant Resources for Extra-Nutritional Attributes in Ruminants: Nuclear and Related Methodologies. 2010. Vercoe, Philip E.; Makkar, Harinder P.S.; Schlink, Anthony C. (Eds.) XII, 247p.

Harinder P.S. Makkar and Christopher S. McSweeney. 2005. Methods in Gut Microbial Ecology for Ruminants. Springer Publishers.

Measuring Methane Production from Ruminants. 2007. Edited by Harinder P.S. Makkar and Philip E. Vercoe. Springer Publishers.

Estimation of Microbial Protein Supply in Ruminants Using Urinary Purine Derivatives. IAEA-CN-110. Vienna 2003. H.P.S. Makkar and X.B. Chen (eds) 2004. Kluwer Academic Publishers.

Makkar, Harinder P.S. 2003. Quantification of Tannins in Tree and Shrub Foliage. A Laboratory Manual. Springer Publishers.

Barnes R.F., Nelson C.J., Moore, K.J. and Collins, M., 2007. Forages, Volume II. The Science of Grassland Agriculture 6th Edition. Blackwell Publishing. SB193. F65 2007

Givens, D.I., Owen, E., Axford, R.F.E. and Omed, H.M., 2000. Forage Evaluation in Ruminant Nutrition. CABI Publishing, Wallingford, UK. SF95 .F6725

t'Mannetje, L. and Jones, R.M., 2000. Field and Laboratory Methods for Grassland and Animal Production Research, CABI Publishing, Wallingford, UK. SB199 .F44

Buxton, D.R., Muck, R.E. and Harrison, J. H., 2003. Silage Science and Technology. Agronomy, 42. American Society of Agronomy Inc, Crop Science Society of America, Inc., Soil Science Society of America, Inc. Madison, Wisconsin, USA. SB195 .S56 2003

D'Mello, J.P.F., 2000. Farm animal metabolism and nutrition, CABI Publishing, Wallingford, UK, 438 pp. SF95 .F32 2000

Fahey, G.C., Jr. (ed.) 1994. Forage quality, evaluation and utilization. Amer. Soc. Agronomy, Madison, WI. SF94.6 .N37

Forbes, J.M. 1995. Voluntary food intake and diet selection in farm animals. CAB Int., Oxon, UK. SF95 .F674 ; SF95 .F674

Minson, D.J. 1990. Forage in ruminant nutrition, Academic Press, San Diego SF95 .M6585

Leaver, J.D., 1982. Herbage intake handbook, British Grassland Society, Reading, UK. SF95 .H471

Wheeler, J.L. and Mochrie, R.D., 1981. Forage evaluation : concepts and techniques. Proceedings of a workshop on Forage evaluation and utilization, an appraisal of concepts and techniques, Armidale, NSW; U.S./Australia Cooperative Science Program. SF95 .F67

Van Soest, P.J., 1994. Nutritional ecology of the ruminant, Comstock Publishers, Ithaca. SF95 .V36 1994

Cell phones

Cell phones should be turned off during classes.

Academic Honesty

In 1995 the UF student body enacted an honor code and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2011-2012 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor. This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

*University Counseling & Wellness Center,
3190 Radio Road, 352-392-1575,*

www.counseling.ufl.edu/cwc/

Counseling Services
Groups and Workshops
Outreach and Consultation
Self-Help Library
Training Programs
Community Provider Database

*Career Resource Center, First Floor JWRU,
392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. 0001 Reid Hall, 352-392-8565, **www.dso.ufl.edu/drc/**

TENTATIVE COURSE OUTLINE

Class meets from 1.55 to 2.45 pm (7th period) on Mon and Wed and from 12.50 to 1.40 pm (6th period) on Thursdays. All classes will be in room 102 bldg. 459.

Topic	Date	Weekday
Introduction, course objectives (DV)	1/7/2019	Mon
The importance and variability of forages (DV)	1/9/2019	Wed
Representative sampling (DV)	1/10/2019	Thu
Definition and indices of forage quality (LF)	1/14/2019	Mon
Improving forage quality (LF)	1/16/2019	Wed
Proximate analysis (DV)	1/17/2019	Thu
NO CLASS (Martin Luther King Day)	1/21/2019	Mon
Structural carbohydrate methods (DV)	1/23/2019	Wed
Proximate analysis review -1	1/24/2019	Thu
In vivo digestibility methods (total collection) (DV)	1/28/2019	Mon
In vivo digestibility methods 2 (DV)	1/30/2019	Wed
In-situ degradability methods (LF)	1/31/2019	Thu
NO CLASS (Ruminant symposium)	2/4/2019	Mon
In vitro digestibility methods (DV)	2/6/2019	Wed
Digestibility paper review -2	2/7/2019	Thu
Fermentation gas production methods (DV)	2/11/2019	Mon
Estimating the rate of passage (DV)	2/13/2019	Wed
Mid-term I	2/14/2019	Thu
Processing (LF)	2/18/2019	Mon
uNDF (LF)	2/20/2019	Wed
In vivo digestibility paper review-3	2/21/2019	Thu
Methods of estimating microbial protein synthesis	2/25/2019	Mon
Non-structural carbohydrate methods	2/27/2019	Wed
uNDF paper review-4	2/28/2019	Thu
NO CLASS (Spring Break)	3/4/2019	Mon
NO CLASS (Spring Break)	3/6/2019	Wed
NO CLASS (Spring Break)	3/7/2019	Thu
GMO and livestock (LF)	3/11/2019	Mon
Quantifying rumen function (DV)	3/13/2019	Wed
Rumen function paper review-5	3/14/2019	Thu
Estimating intake (DV)	3/18/2019	Mon
Estimating intake (DV)	3/20/2019	Wed
Intake paper review -6	3/21/2019	Thu
North Florida Research and Education Center, Marianna trip; Estimating greenhouse gas emissions from ruminants	3/25/2019	Mon
Antinutritive factors in feeds (DV)	3/27/2019	Wed
Mid-term II	3/28/2019	Thu
General problems of feed analysis (DV)	4/1/2019	Mon
Prediction of nutritive value & accuracy versus precision (DV)	4/3/2019	Wed

Greenhouse gas paper review -7	4/4/2019	Thu
Silage fermentation and conservation (LF)	4/8/2019	Mon
Particular problems with silage analyses (LF)	4/10/2019	Wed
Silage paper review -8	4/11/2019	Thu
Associative effects of feeds (DV)	4/15/2019	Mon
Anti-nutritive factors paper review -9	4/17/2019	Wed
Associative effects of feeds review-10	4/18/2019	Thu
TBD	4/22/2019	Mon
TBD	4/24/2019	Wed
Reading week / Review	4/25/2019	Thu
Final exam	4/29/2019	Mon

Note: The Final Exam will be comprehensive and cover lectures and manuscripts discussed during the entire semester. Final exam will take place during the normal class period on the date indicated above.