



## SA 301 Seed Biology Course

January through April 2019

### How do seeds develop and germinate?

Gain knowledge in seed biology by participating in our **2019 Seed Biology Webinar Series**.

Seed Academy's Seed Biology webinar series is comparable to a "300" level University course on Seed Science and Technology presented as twelve (12) one-hour webinar classes. The primary references are: "*Principles of Seed Science and Technology*" and the "*Seed Technology Training Manual*".

Participants will gain knowledge of seed biology, principles of seed technology and practical experiences relating to seed production and seed quality. This is an educational course for people working in the seed industry who desire a better understanding of principles and concepts. This is a great course for persons planning to become a Registered or Certified Seed Technologist.

Topics covered include:

Reproduction in Plants	Seed Dormancy
Seed Formation and Development	Microbes and Seed Interactions
Seed Chemistry	Seed Vigor I
Seed Germination I	Seed Vigor II
Seed Germination II	Seed Storage
Seed Viability Testing	Seed Deterioration

Our instructor is Tim Gutormson, who brings 35 years of seed technology experience in seed testing and research. He has also instructed college level courses, workshops and webinars for 30 years. Tim has BS and MS degrees in Agronomy, is a Registered Seed Technologist of the SCST, past president of SCST, past chairman of the American Seed Research Foundation and the current chairman of Seed Testing Research Foundation. Tim is currently an owner of SoDak Labs, Inc., located in Brookings, South Dakota.

Course Fee: \$650/location (includes two Seed Academy T-shirts, there is no limit on the number of participants/location).





Join us Thursday mornings at 10:00 -11:00 AM Central Time Zone.

January 17 - **Reproduction in Plants:** We will review floral induction, morphology, gametes, fruit development and fruit seed types.

January 24 - **Seed Formation and Development:** Discuss self and cross fertilization seed development, embryogeny and endosperm development. Overall seed development and interaction with environment will be reviewed.

January 31 - **Seed Chemistry:** Review genetic and environmental influences on chemistry of seeds. Discuss carbohydrate, lipid, protein and other chemical compounds stored in seeds.

February 7 - **Seed Germination I:** Review definitions, morphology, requirements of germination. Begin discussion patterns of germination with imbibition of water.

February 14 - **Seed Germination II:** Continue discussion of patterns of germination including enzyme activation, breakdown of storage tissues, and initiation of embryo growth and biochemical mechanism of seed germination.

February 21 – **Seed Viability Testing:** Discuss AOSA and ISTA methods of testing viability by germination, discuss tetrazolium testing concepts and other viability tests.

February 28 - **Seed Dormancy:** Review primary, exogenous, and endogenous mechanisms. Discuss secondary dormancy and after-ripening.

March 7 – **Microbes and Seed Interactions:** Discuss concepts of field and storage fungi, primary and secondary infections, saprophytic fungi and review four (4) case studies on interactions of fungi with seed testing.

March 14 – (Tuesday) **Seed Vigor I:** Define seed vigor, and review history and progress of vigor testing. Examine factors influencing vigor and concepts around vigor tests.

March 21 - **Seed Vigor II:** Walk through the practical aspects of conducting the primary vigor tests including traditional cold, saturated cold, accelerated aging, soak test, and electrical conductivity testing.

March 28 - **Seed Storage:** Review life span of seeds, concepts of seed deterioration, factors influencing the life span (Relative Humidity, seed moisture, moisture equilibrium, temperature and genetic factors).

April 4 – **Seed Deterioration:** Continue discussing concepts around seed deterioration and practical observations from seed testing.

\*"Principles of Seed Science and Technology" Fourth Edition by Lawrence O. Copeland and Miller B. McDonald and the "Seed Technologist Training Manual", Second Edition, edited by Miller B. McDonald, Tim J. Gutormson and Brent E. Turnipseed.

Please register by Saturday, January 12, 2019.

Three ways to register:

(1) Online at: <https://www.sodaklabs.com/seed-academy/> (2) Fax this form to: 605-692-2756 (3) Call Jena Werpy at 605-692-2758

NAME: \_\_\_\_\_ PHONE: \_\_\_\_\_

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

EMAIL: \_\_\_\_\_

- Bill my Account # \_\_\_\_\_
- Credit Card
- Check
- T-Shirt Sizes S M L XL XXL (pick 2 sizes)