
APBI 326-INTRODUCTORY PLANT PATHOLOGY

COURSE SYLLABUS-FALL 2021

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwm̓əθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Introductory Plant Pathology	APBI 326	3

PREREQUISITES

First year biology class.

COREQUISITES

None

CONTACTS

Course Instructor(s)	Contact Details	Office Location	Office Hours
Gurcharn S. Brar	gurcharn.brar@ubc.ca (typically responds within 24 hrs)	MCML 231	By appointments or drop by when office door is open

OTHER INSTRUCTIONAL STAFF

Teaching Assistants: TBD

Other than teaching assistants, staff from 'Crop Pathology and Genetics' Lab might be involved in some lab classes.

COURSE STRUCTURE

The course will comprise lectures on theory and lab class every week. The lab class will be very interactive where students will have opportunity to have discussions with their fellow students as well as the instructor/TAs. Theory class will be delivered as a Powerpoint presentations with the use of blackboard. Lecture slides will be uploaded online one day prior to lecture. A

significant portion of lectures will be pre-recorded and uploaded a week before the class which will allow students to engage in discussions around the topic in in-person class.

SCHEDULE OF TOPICS

THEORY CLASS

Lecture	Topic
1	Introduction: course introduction, student introduction, class statistics, evaluation criteria, and textbooks or reading material introduction
2	Introduction to plant pathology, plant disease epidemiology, and plant pathogens (fungi, bacteria, viruses, nematodes, mollicutes, Oomycetes)
3	Classification/taxonomy of plant pathogens
4	Viral diseases – buberry scorch virus, tomato ringspot virus, wheat streak mosaic virus, barley yellow dwarf virus
5	Bacterial and mollicute diseases – bacterial blight on blueberries, bacterial diseases of greenhouse crops, wheat leaf stripe, Goss’s wilt of corn, Aster yellows of Canola
6	Oomycete diseases – late blight of tomato and potato, Pythium/Phytophthora root rot (damping-off), sudden oak death, Aphanomyces root rot of field pea and lentil
7	FUNGAL DISEASES Basidiomycetes diseases: seed-borne diseases – smut and bunt fungi (Loose smut of wheat and barley, corn smut, Karnal bunt of wheat, Ganoderma fungi of tree species)
8	Basidiomycetes diseases: rust fungi (Wheat and barley rusts, poplar rust, flax rust)
9	Ascomycetes diseases Residue-borne diseases – Phomopsis canker and twig blight of blueberry, bluberry anthracnose, leaf spots of cereals, blackleg of canola
10	Ascomycetes diseases Soil-borne diseases – common root rots, ergot, sclerotinia rots
11	Ascomycetes diseases Wilt diseases – Fusarium wilt of strawberry, verticillium wilt of canola, Fusarium wilt of Flax, Fusarium wilt of trees
12	Diseases vectored by insects – dutch elm disease, fire blight
13	GUEST LECTURE Dr. Siva Sabratnam (BC Ministry of Ag) – diseases of cash crops in lower mainland and their impact on BC agriculture industry
14	Scouting for diseases and disease diagnostics
15	GUEST LECTURE Dr. Vippen Joshi (BC Ministry of Ag) – Crop disease diagnostics research at Ministry of Ag Diagnostic Lab, Abbotsford
16	DISEASE MANAGEMENT

	Genetic resistance to plant pathogens
17	DISEASE MANAGEMENT Cultural management – crop rotation, tillage, intercropping
18	DISEASE MANAGEMENT Biological control
19	DISEASE MANAGEMENT Fungicides – classification, risk reduction, cost and benefits
20	GUEST LECTURE Quarantine diseases, policy and sanitation (CFIA rep)
21	GUEST LECTURE Most important diseases of Forest Trees in BC (Dr. Hamelin and/or Feau)
22	GUEST LECTURE Diseases of grapevines in BC (Dr. Urbez-Torres, AAFC-Summerland)
23	GUEST LECTURE Diseases of hemp and marijuana (Dr. Zamir Punja, SFU)
24	Summary and wrap-up

LAB CLASS

Lab session	Topic
1	Acquaintances of various plant pathology appliances, tools, and glassware used in lab, Parts, handling, and use of microscope
2	Tour of UBC Farm, UBC Totem Field for plant disease identification
3	Preparation of temporary slides and stains
4	Diseases of blueberries – pathogen and disease symptom identification
5	Diseases of cranberries and strawberries
6	Diseases of wheat and barley– pathogen and disease symptom identification Rusts, bunts, smuts
7	Diseases of wheat and barley – pathogen and disease symptom identification Viral and bacterial diseases
8	Grapevine diseases
9	Tree diseases - Poplar rust, ganoderma of tree species, sudden oak death
10	Diseases of greenhouse crops
11	Case study presentations (group of 2-3 students)
12	Case study presentations (group of 2-3 students)

LEARNING OUTCOMES

The course will be a problem-based-learning course where students will engage in real-life plant disease issues, including the plant disease issues of Canadian crops and crops grown beyond Canada. By the completion of this course, students will be expected to:

- be familiar with general concepts of plant pathology, plant pathogens, and crop disease management as they relate to plant pathogens of crops (field and horticultural);
- have an understanding of some of the economically important plant diseases affecting crops in western Canada, including life histories, environmental conditions favorable for disease, effect of climate change on diseases and pathogens, and management options for disease control; and
- be able to apply general disease mitigation concepts for the control of diseases not covered in the course.

LEARNING MATERIALS

No textbook required, however, it is highly recommended that you consider purchasing or have access to:

***Diseases of Field Crops in Canada.* K.L. Bailey, B.D. Gossen, R.K. Gugel, and R.A.A. Morrall (Eds.). 2003. The Canadian Phytopathological Society.**

Plant Pathology. G.N. Agrios (Ed.). 2005. Academic Press.

More information on plant pathological issues at:

- Canadian Phytopathological Society: www.phytopath.ca
- American Phytopathological Society: www.apsnet.org

ASSESSMENTS OF LEARNING

THEORY CLASS (70%)

Midterm exam	15%
Opinion piece	5%
Case study presentations	10%
Final exam	20%
Class discussions participation	10%
Quizzes (4)	10%
Extra/Bonus awards (3-5)	2%

LAB CLASS (30%)

Sample/disease/pathogen identification	20%
Attendance (full marks for 10 or more attendances out of 12 total)	5%
Lab manual/file/assignments/project	5%

Written Exams: Midterm and final examinations must be written on the date scheduled.

Opinion piece: Give your opinion on the topic provided and justify with facts (at least 5 references). Two topics in the form of press and or scientific articles (or portions of multiple articles) will be assigned for which a one page opinion piece is to be drafted (maximum one double-spaced page ~325 words), Times New Roman, 12 point, one inch margins on top/bottom/left/right. Each opinion piece assignment will count for 5% of the final grade. Opinion pieces are to be submitted as an MSWord file (NOT as PDF).

Case study presentation: In groups of 2-4, students will prepare a case study presentation (10-15 mins) on a crop disease issue or related topic. This could be a pest issue that a western Canadian farmer has dealt with in last year (or earlier) or a topic of broad importance related to plant disease control and integrated pest management (IPM). Please provide the contact information with farmers or others (industry representatives or researchers) that have dealt with the issue. Each group member will contribute to researching the issue and to sharing ideas and experiences to prepare a collective presentation for evaluation. In terms of group member participation AND contribution, students will have the option to conduct a peer evaluation of the participation and contribution of each student in the group, if a consensus cannot be reached that there was equal participation. The case study presentation accounts for 10% of the final grade.

Class discussion participation: There will be a significant number of classes dedicated to discussions on topics presented in pre-recorded lectures. Students will be judged based on their participation in these discussions.

Quizzes: There will be four surprise quizzes and each quiz will take 15 minutes of the lectures. Each quiz exam will have 10 multiple choice questions relating to topics discussed in previous lectures.

Extra/bonus awards: In addition to 100% weightage marks, instructor will ask 3-5 conceptual questions spreaded across the course and whosoever will answer these questions will get 2% bonus marks.

UNIVERSITY POLICIES

Policies and Resources to Support Student Success

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on [the UBC Senate website](#).

Statement regarding online learning for international students during the COVID pandemic

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit <http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0> for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: <http://academic.ubc.ca/supportresources/freedom-expression>.

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Recording (without permission of the instructor) of lectures is not permitted.