

## ECOL 471: ECOLOGY OF URBAN ENVIRONMENT



Image Source: B. Freedman, 2018

Course Teacher  
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# Content

- General information
- Course description
- Course goal
- Course outcome
- Course structure
- Reading materials
- Course assessment
- References
- Videos

# General Information

Course Code : ECOL - 471

Course Title : Ecology of Urban Environment

Number of Credits : 4.0 ECTS

Course duration : 18 Weeks

Level : Postgraduate

Course Teacher : Dr. Gurjeet Kaur

Prerequisite : Basic understanding on environmental studies  
(school higher level), English language skill.

## Course description

- ▶ This course provides students an in-depth theoretical knowledge on the interaction of between humans and their surroundings such as construction, housing, transport, etc. It will make students understand the impact of urbanization on various natural resources. It will also emphasis the need for maintaining urban biodiversity.

## Course goals

- ▶ This course aims to provide students an overall understanding of the complex urban environment and its dynamics in response to human's actions. The objectives of the course are to introduce the importance of urban ecology and urban environment in the light of human health, to familiarize urbanization and its impacts on the natural resources, to introduce connection between urban greeneries and sustainable development goals, to explain the carbon and water cycle in urbanization, to elucidate the role of peri-urban environment in urbanization, to introduce the concept of green city, green building in the light of ecosystem services.

By the end of the course, successful students will:

- ▶ know about ecology of urban environment and the role of humans in urban ecology
- ▶ be familiar with the role of urban environment on human health
- ▶ be aware of the impacts of urbanization on the urban vegetation and aquatic habitats
- ▶ know the potential of urban forestry and its role on sustainable development goals
- ▶ be able to design urban forestry
- ▶ be acquainted with response of urbanization at the community and ecosystem level
- ▶ be familiar with the carbon cycle and water cycle in the urban environment.
- ▶ know about indoor and outdoor air pollutions and health inequities in cities.
- ▶ be aware of the need for maintain the urban biodiversity for healthy living.
- ▶ conduct independent research in urban ecology, including proposal writing, implementation, oral/poster presentation, and written manuscripts/popular articles.

<b>WEEK 1</b>	<b>Introduction to Urban Ecology</b>
	urban environment and inherent ecological interest
<b>Week 2</b>	testing ecological theory in urban environment.
	urban environment and human health and well-being
<b>Week 3</b>	conserving biodiversity.
	Urban environments- Urbanization and primary biophysical processes
<b>Week 4</b>	Removal of vegetation, urban infrastructure
	Replacement with permeable surfaces
<b>Week 5</b>	Urban forestry – introduction
	Contribution of urban forestry to sustainable development goals
<b>Week 6</b>	Designing urban forest.
	Resilient cities and urban forest.
<b>Week 7</b>	<b>Test 1 from Unit 1<sup>st</sup> and 2<sup>nd</sup></b>
<b>Week 8</b>	Community and ecosystem- level responses to urbanisation
	Niche theories in urban Ecology
<b>Week 9</b>	Habitat models, ecological guilds
	Resource competition models, movement of individuals through space
<b>Week 10</b>	Urbanisation and carbon cycle
	Mitigation and strategies
<b>Week 11</b>	Urbanisation and water cycle
	Food security in Urbanizing World – Impacts of agriculture on biodiversity.

<b>Week 12</b>	<b>Habitat loss and fragmentation, water cycle, nutrients.</b>
	Food systems in context of ecosystem services.
<b>Week 13</b>	Provisioning, supporting, regulating and cultural services.
	Case studies of Japan, Australia and Denmark
<b>Week 14</b>	<b>Test 2 from Unit 3<sup>rd</sup> and 4<sup>th</sup></b>
<b>Week 15</b>	Urban ecology of humans- urban parks and open space. Outdoor air pollution, indoor air pollution
	Urban sprawl, neighbourhood disorders. Health inequities in the cities
<b>Week 16</b>	Peri urban environment, peri- urban diversity and invasion
	Conserving biodiversity-maintaining ecosystem services in cities
<b>Week 17</b>	Integration of urban planning, protection of biodiverse landscape
	Green city, landscape connectivity, novel habitats and ecosystems.
<b>Week 18</b>	<b>Seminar Presentations and Discussions</b>

## Lectures and in-class discussion

### Students will be able to

- ▶ know about ecology of urban environment and the role of humans in urban ecology
- ▶ be familiar with the role of urban environment on human health
- ▶ be aware of the impacts of urbanization on the urban vegetation and aquatic habitats
- ▶ know about indoor and outdoor air pollutions and health inequities in cities.

## Seminar presentations and Group Discussions

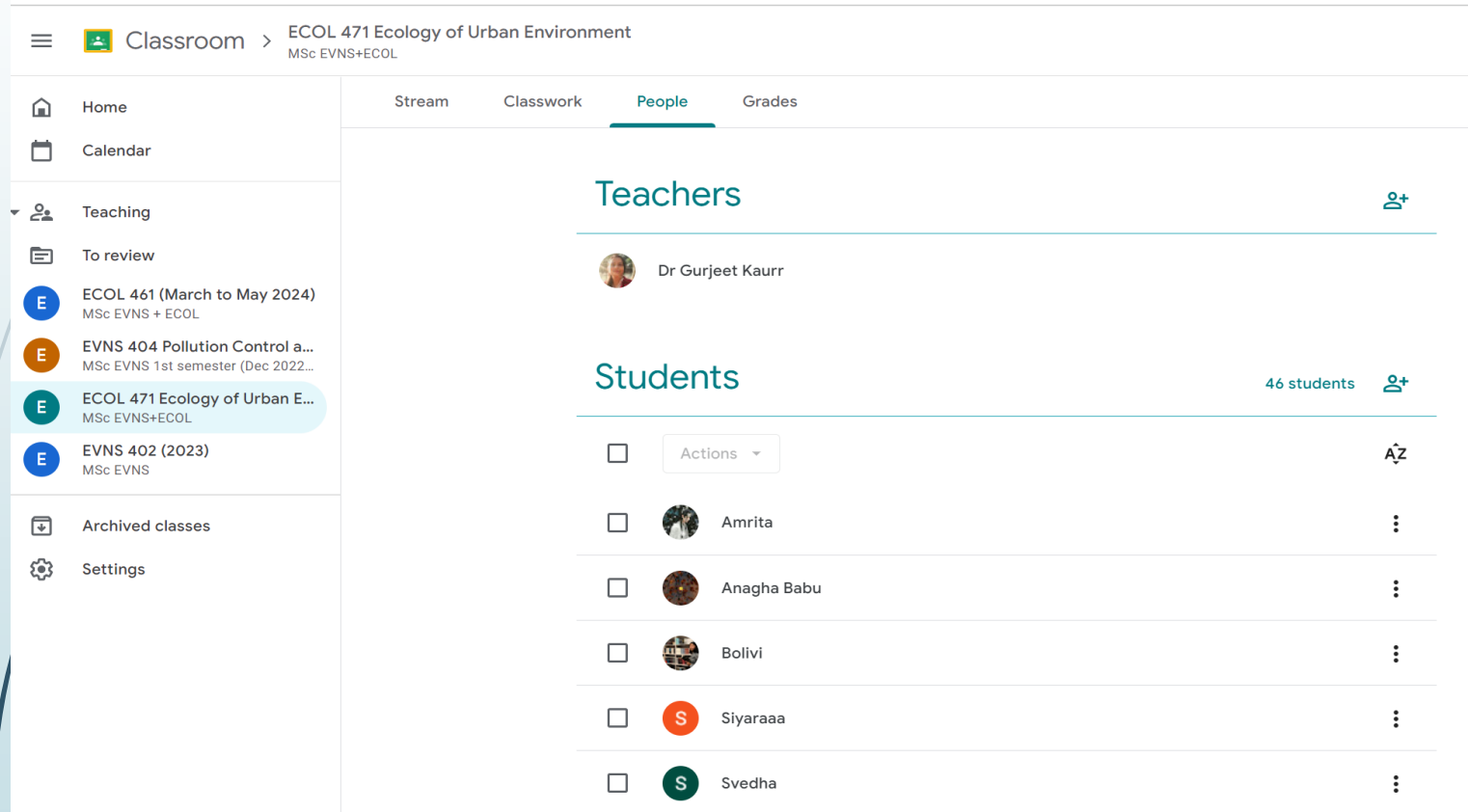
### Students will be able to

- ▶ know the potential of urban forestry and its role on sustainable development goals and be able to design urban forestry
- ▶ be acquainted with response of urbanization at the community and ecosystem level
- ▶ Reading assignments and discussion of assigned papers will help in thought provoking and clearing the concepts on the topic.
- ▶ conduct independent research in urban ecology, including proposal writing, implementation, oral/poster presentation, and written manuscripts/popular articles.



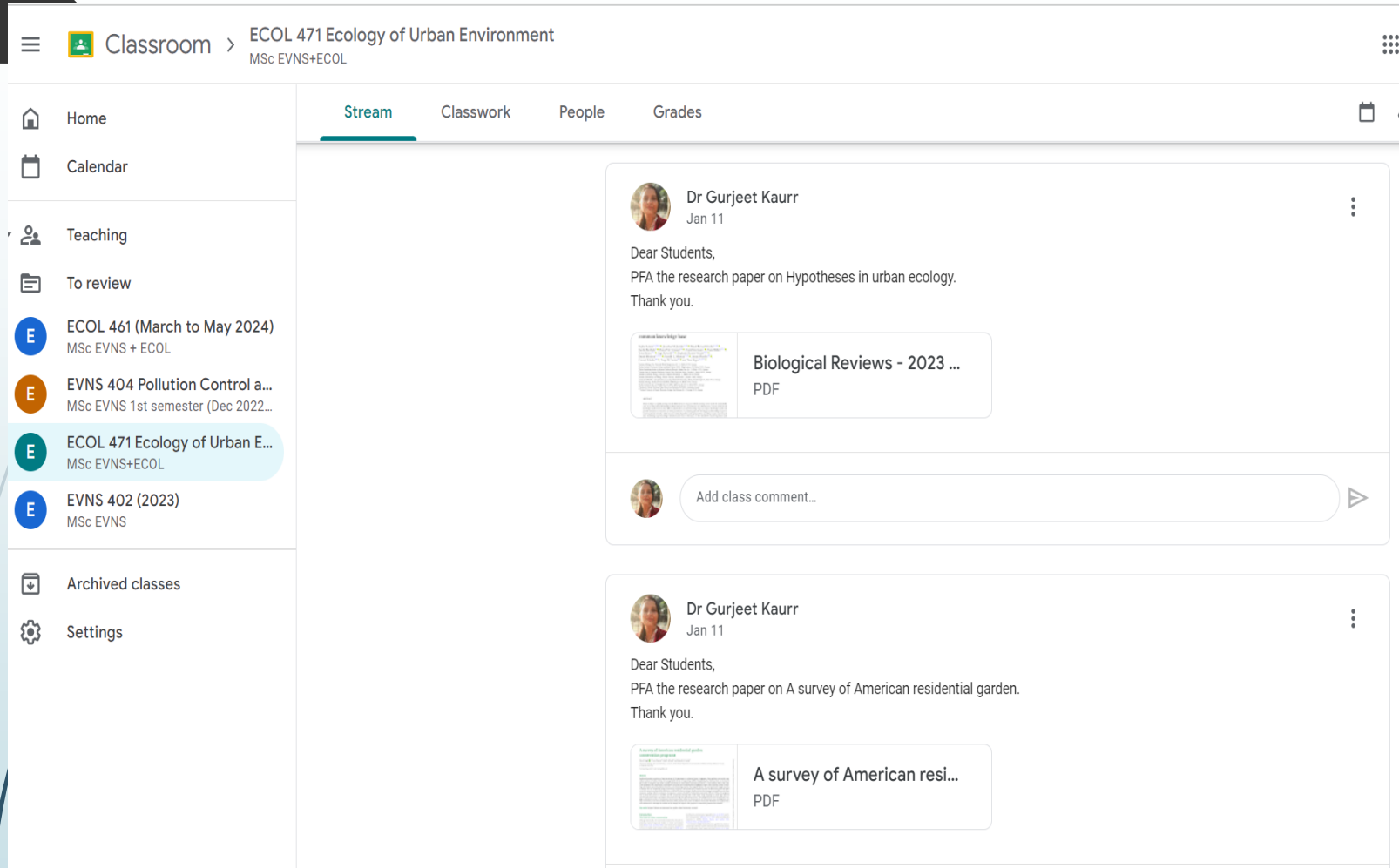
# Reading materials

- Reading materials will be uploaded in the google classroom.
- Open access books, review, latest publications and lecture materials will be provided.



The screenshot shows a Google Classroom interface for the course "ECOL 471 Ecology of Urban Environment" (MSc EVNS+ECOL). The left sidebar contains navigation options: Home, Calendar, Teaching (expanded), To review, and Archived classes. Under "Teaching", several courses are listed, with "ECOL 471 Ecology of Urban Environment" highlighted. The main content area shows the "People" tab, displaying a list of teachers and students. The teacher list includes Dr Gurjeet Kaurr. The student list includes Amrita, Anagha Babu, Bolivi, Siyaraaa, and Svedha, with a total of 46 students.

## Reading materials shared in Google classroom



The screenshot shows a Google Classroom interface for the course "ECOL 471 Ecology of Urban Environment" (MSc EVNS+ECOL). The left sidebar contains navigation options: Home, Calendar, Teaching, To review, a list of classes (with "ECOL 471 Ecology of Urban E..." selected), Archived classes, and Settings. The main area is divided into "Stream", "Classwork", "People", and "Grades" tabs. The "Stream" tab shows two posts from Dr. Gurjeet Kaurr, dated Jan 11. Each post includes a message to students and a PDF link. The first post is about a research paper on "Hypotheses in urban ecology" and links to "Biological Reviews - 2023 ... PDF". The second post is about a research paper on "A survey of American residential garden" and links to "A survey of American resi... PDF". Below each post is a comment input field.

## Reading materials shared in Google classroom

Classroom > ECOL 471 Ecology of Urban Environment  
MSc EVNS+ECOL

Home

Calendar

Teaching

To review

ECOL 461 (March to May 2024)  
MSc EVNS + ECOL

EVNS 404 Pollution Control a...  
MSc EVNS 1st semester (Dec 2022...

ECOL 471 Ecology of Urban E...  
MSc EVNS+ECOL

EVNS 402 (2023)  
MSc EVNS

Archived classes

Settings

Stream Classwork People Grades



Dr Gurjeet Kaurr  
Feb 6

Dear Students,  
PFA the Case studies on urbanisation and carbon cycle.  
Thank you.



Frontiers | The Role of Urb...  
<https://www.frontiersin.org/article/>



The role of urbanization in ...  
<https://ui.adsabs.harvard.edu/ab/>



Link  
<https://deepblue.lib.umich.edu/bi>



Add class comment...



Dr Gurjeet Kaurr  
Feb 6

Dear Students,  
PFA the Case studies on urban environment and human health.  
Thank you.



Analysis of urban built Env...  
PDF



Case study of CHina.pdf  
PDF

# Internal Assessment

**Week - 7** Internal Test of 15 marks

Syllabus: Unit 1 and 2

**Week - 14** Internal Test of 15 marks

Syllabus: Unit 3 and 4

**Week - 18** Seminar Presentation and Discussion

Syllabus: Unit 5 and 6

## Course Assessment

Type of assessment	Percentage of marks
Written test 1	15
Written test 2	15
Seminar Presentation and discussion	10
Final assessment	60
<b>Total</b>	<b>100</b>

## References

1. Riccardo Privitera and Toma Dabulevičienė, 2021. Smart Environment and Climate Change Management, Textbook, Maggioli Editore.
2. Hall, P, 2020, Urban and Regional Planning, 6th Ed. Taylor & Francis Ltd.
3. Kristen, MP, 2016, Ecology of Urban Environments, Wiley-Blackwell publications, USA.
4. McCleery, RA, Moorman, CE, Peterson, MN, 2014, Urban Wildlife Conservation Theory and Practice, Springer Publisher.
5. Forman RTT, 2014, Urban Ecology: Science of Cities, Cambridge University Press.
6. Carreiro, MM, Song, YC, Wu, J., 2008, Ecology, planning, and management of Urban forests, Springer Publisher.

## Videos:

Videos/video lectures will be uploaded related to each unit/topic as required

## Few Links for the videos:

<https://www.youtube.com/watch?v=r4ZVlbChLns>

<https://www.youtube.com/watch?v=r8LPjvk7f7c>

<https://www.youtube.com/watch?v=JkDRqQS6QwA>

<https://www.youtube.com/watch?v=Qaj2fvRrJS0>

<https://www.youtube.com/watch?v=iAAvETw-qbQ>



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<https://urgent-project.net>

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