BIOGRAPHICAL INFORMATION

Name (expand initials)	d initials) Dr. DIPANKANA BHATTACHERJEE				
Present position	ASSISTANT PROFESSOR (0	GR-I) Gender M 🗆 F 🖂			
Address	DEPARTMENT OF CIVIL ENGINEERING				
	INDIAN INSTITUTE OF ENGINEERING SCIENCE AND TECHNOLOGY, SHIBPUR, HOWRAH – 711103, WEST BENGAL				
Phone: Off. $+91-33-2668-4561$					
Fax	Email	dipankana@civil.iiests.ac.in			
	Homepage	https://www.iiests.ac.in/IIEST/Faculty/civil- dipankana			
Academic qualifie	cations				
Year	Degree	University/Institution			
2005Madhyamik ParikshaWBBSE, West Bengal(10th) [Score: 90.38%]					
Awarded with Shield for sec Gokhale Memorial Girls' S	<mark>curing highest total marks in agg</mark> chool, Year: 2005	gregate in Class X Board Examination from			
2007	Higher Secondary (12 th) [Score: 96%]	WBCHSE, West Bengal			
Awarded with Dr. Monoranjan Biswas Physics Aptitude Scholarship by Nava Nalanda High School, Year: 2007					
2011	B.C.E [CGPA: 9.11]	Jadavpur University			
2013	M.TECH. [CGPA: 9.86]	IIT BOMBAY			
2018	Ph.D. [CGPA: 9.76]				
Awarded with Excellence Technology Bombay (II)	e in Ph.D. Research for the yea F Bombay), Year: 2019	ar 2017-19 by Indian Institute of			
Positions held by the nominee (in chronological order)					
Year(s) University/Institution Position held					
2018	IIT BOMBAY	Research Associate			
2018-2019	IIT BOMBAY	Project Associate			
2019-2023	IIEST SHIBPUR	Assistant Professor (Gr II)			
2013-ongoing	IIEST SHIBPUR	Assistant Professor (Gr I)			

Awards and Honors

- Young Faculty Research Award (YFRA)-2021 bestowed by the IIEST ALUMNI ASSOCIATION –WASHINGTON METROPOLITAN AREA (IIESTAA – WMA) and GAABESU SHIBPUR FOUNDATION USA, Year: 2023
- IGS-Kolkata Chapter Young Geotechnical Engineer (YGE) Award on "Earth Retaining Structures", Year: 2021
- Second Best paper Prize, sponsored by Springer Nature in the Theme of "Numerical and Physical Modeling and Soil Dynamics" presented at Indian Geotechnical Conference, Year: 2020
- Excellence in Ph.D. Research for the year 2017-19 by Indian Institute of Technology Bombay, Year: 2019
- Young Geotechnical Engineer Award by Centre for Geomechanics and Railway Engineering, University of Wollongong, Australia and the Organizing Committee of International Symposium on Geotechnics of Transportation Infrastructure (ISGTI), Year: 2018
- IGS-Dr. B.B. Rai-S.N. Gupta Biannual Prize for the BEST PAPER on "Earth and Earth-Retaining Structures, Including Interaction and Instrumentation" by Indian Geotechnical Society (IGS), Year: 2013
- **Dr. Monoranjan Biswas Physics Aptitude Scholarship** by Nava Nalanda High School, Year: 2007
- Shield for securing highest total marks in aggregate in Class X Board Examination from Gokhale Memorial Girls' School, Year: 2005

Additional information and Publications

(a) Name & Address:

Dr. Dipankana Bhattacherjee [Sex: Female] Assistant Professor, Department of Civil Engineering, IIEST SHIBPUR, P.O Botanic Garden, P.S.: A.J.C. Bose B. Garden Police Station Dist: Howrah, Pin Code- 711103, State: West Bengal, INDIA Email: <u>dipankana@civil.iiests.ac.in</u>; <u>dipankana.civil@faculty.iiests.ac.in</u>

(b) Area of expertise of the candidate:

- Geotechnical Engineering and Applied Soil Mechanics
- Geotechnical Physical Modelling at normal and enhanced gravity
- Stability of Slopes and Ground Improvement
- Geosynthetics in Geotechnical Engineering
- Rainfall induced landslides and mitigation measures
- River Bank Erosion and mitigation measures
- Unsaturated Soil Mechanics and its application to slope stability

(c) List of ongoing and completed sponsored research projects executed by the candidate:

Project title	Start	Completion	Project	Sponsoring
	date	date	cost (Rs)	organization
Construction Challenges of Strip Footings Resting on Low-Permeable Soil Slopes [PI]	13/01/2020	14/04/2021	1,20,000/-	TEQIP-III
Development of Bank Protection Methodologies for Various Vulnerable Reaches of Rivers in West Bengal through Model Studies and Preparation of Design Charts and Guidelines [EHPPL/CE/AG/009/22- 23] [Co-PI]	01/03/2023	Ongoing [Period – 2 years]	12,00,000/-	East Hooghly Poly Plast Pvt. Ltd.
Development of cost-effective performance specific natural fibre and agro-waste based geotextiles and creation of design parameters for slope stabilisation and soil erosion in the North-Eastern India [Co-PI]; Collaborating Institute: Indian Jute Industries' Research Association	07/03/2024	MoU under process with IJIRA [Period-2 years]	1,00,00,000/-	Ministry of Textiles, GOI

Note: There are two additional sponsored projects under active stage of scrutiny.



(d) List of ongoing and completed consultancy projects (exceeding Rs. 5 Lakhs) executed by the candidate in the capacity of Co-PI:

SI. No.	Sponsoring Agency	Title of the Project(s)/ Patent(s)	Period	Status
1	ABCI Infrastructures Pvt. Ltd.	Widening and Up-gradation 2- Lane with paved shoulder configuration and geometric improvements: from km 208.00 to km 250.00 (<i>Package 5</i>) on Aiwawal - Tui Pang section of NH- 54 in the state of Mizoram	2020- 2021	Completed
2	ABCI Infrastructures P∨t. Ltd.	Widening and Up-gradation 2- Lane with paved shoulder configuration and geometric improvements: from km 166.00 to km 208.00 (<i>Package 4</i>) on Aiwawal - Tui Pang section of NH-54 in the state of Mizoram	2020- 2021	Completed
3	BLAPPL-GPPL (Joint Venture)	Widening to 2 (Two) Lane with Paved shoulder of Imphal to Jiribam section of NH37 from Design Chainage 66.110 km to 101.280 Km (Existing Chainage km 67.496to Km 103.557) (PKG- 4) in the State of Manipur on Engineering, Procurement & Construction (EPC) mode	2022- 2023	Ongoing
4	Simplex Infrastructures Limited	Widening/ Improvement to 4 (Four) Lane with Paved Shoulder of existing single lane from Srirampur (near Bhairiguri village) to Kachukhana Harichara Paglagaunj Section (PKG -I) of Srirampur to Dhubri Road of newly declared NH-127B of existing KM 0.000 to KM28.050 (Design KM. 0.000 to KM. 27.650), (Design Length= 27.650km) onEPC Bas is in the state of Assam under JICA	2023- 2024	Ongoing
5	Bharat Coking CoalLimited	Scientific Study for determining the Safe Method of Working, Ultimate Pit Slope and Dump Slope with Monitoring of Slope Stability of Basantimata- Dahibari Colliery Under CV AREA-XII	2022- 2023	Completed
6	Minsol India Private Limited	Preparation of Geotechnical report onHighwall mining at Amalgamated Amlo Dhori	2023- 2024	Completed
7	Eastern Coalfields Limited (ECL)	Scientific study of West Kenda OCP of New Kenda colliery, Kenda Area, ECL as per regulation no. 138(1) and 37(2) c of CMR-2017, proposal for dealing/ sealing of fire in the developed galleries of disused working of R-VI seam and stabilization of ground in the pot hole/ subsided area	2024- 2025	Ongoing
8	Bharat Coking CoalLimited	Scientific monitoring of dump and pit slope stability by determining FOS and pore pressure at Basantimata Dahibari Colliery under CV area of BCCL	2024- 2025	Ongoing

(e) Overall technical & intellectual capacity of the candidate:

• **Expertise in physical modelling:** The candidate has designed and developed an <u>in-flight</u> <u>rainfall simulator at enhanced gravity levels in centrifuge</u>. The developed simulator is capable of inducing in-flight rainfall of various intensities (varying from 10 mm/h to 80 mm/h in prototype dimensions) and durations (over a year continuously in prototype dimensions) on geotechnical structures using specially designed pneumatic nozzles.

<u>**Related publication</u></u>: D. Bhattacherjee and B.V.S Viswanadham "Design and Performance of an In-Flight Rainfall Simulator in a Geotechnical Centrifuge",** *Geotechnical Testing Journal***, American Society for Testing and Materials (ASTM), United States, 41(1), 72-91, 2018.</u>**

• **Expertise in material development:** The candidate has developed a <u>tailor-made hybrid</u> <u>geosynthetic material</u> by integrally stitching a non-woven geotextile with a woven geogrid. The hybrid geosynthetic material thus developed, was tested in the laboratory for detailed characterization with respect to drainage ability and reinforcement action.

<u>Related publication</u>: D. Bhattacherjee and B.V.S Viswanadham "Effect of Geocomposite Layers on Slope Stability Under Rainfall Condition", *Indian Geotechnical Journal*, Springer, 48(2), 316-326, 2017

• **Expertise in mitigation of landslides:** <u>A series of centrifuge model tests were conducted by</u> <u>the candidate on model slopes</u>, exhibiting 2V:1H inclination at 30 gravities with 7.2 m height in prototype dimensions. The stability of the model slopes against rainfall infiltration was monitored and instrumented in the laboratory, along with extensive parametric studies. The efficacy of hybrid geosynthetics in <u>mitigation of slope instability could be effectively established</u>.

<u>Related publication</u>: D. Bhattacherjee and B.V.S Viswanadham "Centrifuge Model Studies on Performance of Hybrid Geosynthetic– Reinforced Slopes with Poorly Draining Soil Subjected to Rainfall" [The candidate was awarded with **IGS-Kolkata Chapter Young Geotechnical Engineer (YGE)** Award by the Indian Geotechnical Society for the year 2021 for this publication], *Journal of Geotechnical and Geoenvironmental Engineering*, American Society of Civil Engineers (ASCE), United States, 145(12), Pages – 04019108:1-13 (13 pages), 2019

• **Expertise in numerical modelling:** Numerical modelling was successfully undertaken by the candidate to develop an alternative solution of alleviating the problems posed by low permeable soil slopes during rainwater infiltration on account of their low shear strength and inability to dissipate the excess pore water pressures generated during the rainfall. <u>The phreatic surface and the Factor of Safety of the slopes</u> reinforced with and without dual-function hybrid geosynthetic materials could be established numerically, with the progress of rainfall.

<u>**Related publication</u></u>: D. Bhattacherjee and B.V.S Viswanadham "Numerical studies on the performance of hybrid-geosynthetic-reinforced soil slopes subjected to rainfall",** *Geosynthetics International***, ICE Publishing, United Kingdom, 22(6), 411-427, 2015</u>**

Thesis Supervised

Program	Responsibility	Status	Number
Ph.D	Supervisor	Ongoing	03
	Co-Supervisor	Ongoing	01
M.Tech.	Supervisor	Completed	12
		Ongoing	01
B.Tech.	<u>Currentieer</u>	Completed	21
	Supervisor	Ongoing	05

Reviewer of Reputed Journals

- □ Journal of Geotechnical and Geoenvironmental Engineering (ASCE)
- □ International Journal of Geomechanics (ASCE)
- Geotextiles and Geomembranes (Elsevier)
- Journal of Rock Mechanics and Geotechnical Engineering (Elsevier)
- □ Indian Geotechnical Journal (Springer)

Administrative/Institute Support Work

- □ Faculty in Charge of Institute Works Division, 18-09-2019 Ongoing
- □ Warden of Lt. Williams Hall of Residence, 03-02-2020– Ongoing
- Faculty in Charge of Geotechnical Engineering Laboratory, 15-07-2023 Ongoing
- Member of the Internal Complaints Committee (ICC) of the institute, 23-11-2020–31-12-2022
- Member of the Grievance Redressal Cell of the institute, 22-11-2022– Ongoing
- Member of the Core Committee for the Central Time Table for the Institute, 03-03-2021–Ongoing
- Faculty in Charge of "Society for Creative Arts and Green Environment", 18-06-2021– Ongoing
- □ Member of the committee constituted for Centralized Counselling (CCMT), 14-06-2022–Ongoing
- □ Member of Admission Committee for Enrolment Process in PhD program, 19.10.2022 Ongoing
- □ Member of the committee constituted for preparation of Annual Report, 04-08-2021– Ongoing
- Member of the Core Committee for reviewing the Ordinances of UG, PG and Doctoral Programs of the Institute, 23-02-2024 – Ongoing
- □ Member of Departmental Under-Graduate Committee (DUGC), August 2020 Ongoing
- □ Member of Departmental Routine Committee, December 2019 Ongoing

(f) Detailed list of publications (Papers/articles in standard referred national and international journals/conferences/book chapters)

A) Referred Journals

- Guin, S. and Bhattacherjee, D. Applicability of Geobags as a Sustainable Riverbank Protection Measure, 54, 800–813, Indian Geotechnical Journal (ISSN: 0971-9555, 5-year Impact Factor: 1.5), Springer, <u>https://doi.org/10.1007/s40098-024-00895-9</u>, 2024
- Ray, P., Ghosh, A., and **Bhattacherjee**, **D**. *Theoretical and numerical studies on strip footing resting on encapsulated soil mass*, In print, Transportation Infrastructure Geotechnology (ISSN: 2196-7202, Impact Factor: 2.6), Springer, 2024
- Ray, P., Tabish, Q., Ghosh, A., Kundu, S., and **Bhattacherjee**, **D**. *Physical model study on failure mechanism of strip footing on reinforced granular deposit*, In print, European Journal of Environmental and Civil Engineering (ISSN: 2116-7214, 5-year Impact Factor: 2.3), Taylor and Francis, 2024
- Bhattacherjee, D. and Viswanadham, BVS, Centrifuge Model Studies on the Use of Hybrid-Geosynthetic Inclusions in slopes Subjected to Infiltration, In Press, Indian Geotechnical Journal (ISSN: 0971-9555, 5-year Impact Factor: 1.5), Springer, <u>https://doi.org/10.1007/s40098-024-00976-9</u>, 2024
- Bhattacherjee, D. and Viswanadham, BVS, Centrifuge Model Studies on Performance of Hybrid Geosynthetic--Reinforced Slopes with Poorly Draining Soil Subjected to Rainfall, 145, 04019108:1-13, Journal of Geotechnical and Geoenvironmental Engineering, (ISSN: 1090-0241, 5-year Impact Factor: 4.70), American Society of Civil Engineers (ASCE), United States, 2019
- Bhattacherjee, D. and Viswanadham, BVS, *Effect of Geocomposite Layers on Slope Stability Under Rainfall Condition*, 48 (2), 316-326, Indian Geotechnical Journal (ISSN: 0971-9555, **5-year Impact Factor: 1.5**), Springer, 2018
- **Bhattacherjee, D** and Viswanadham, BVS, *Design and performance of an in-flight rainfall simulator in a geotechnical centrifuge*, 41(1), 72-91, Geotechnical Testing Journal (ISSN: 0149-6115, **5-year Impact Factor: 1.7**), American Society for Testing and Materials (ASTM), United States, 2017
- **Bhattacherjee, D**, Viswanadham, BVS., *Effect of hybrid geosynthetic layers on soil walls with marginal backfill subjected to rainfall*, 362-371, Geotechnical Special Publication, Themed issue: Sustainability and Resiliency in Geotechnical Engineering, GSP 269, American Society of Civil Engineers (ASCE), United States, 2016
- BVS, Viswanadham and Bhattacherjee, D., Studies on the performance of geocomposite reinforced low-permeable slopes subjected to rainfall, 2(69), 2362-2367, Japanese Geotechnical Society Special Publication, Themed issue: Geosynthetics - Mechanical and general aspects of barriers, The Japanese Geotechnical Society (ISSN: 2188-8027), 2016
- Bhattacherjee, D and Viswanadham, BVS, Numerical studies on the performance of hybrid-geosynthetic-reinforced soil slopes subjected to rainfall, 22(6), 411-427, Geosynthetics International (ISSN: 1072-6349, 5-year Impact Factor: 4.3), ICE Publishing, United Kingdom, 2015

B) Reputed Conference publications

- Gupta, S., Kundu S., and **Bhattacherjee**, **D.** Optimal location of free head pile as reinforcement in slopes using the finite element method, In print, Indian Geotechnical Conference (IGC), 2023
- Banerjee, S., Bhattacherjee, D. and Kundu S., Geotechnical Characterization of Soil Reinforced with Vetiver Grass, In print, Indian Geotechnical Conference (IGC), 2023
- Gupta, S. and **Bhattacherjee**, **D**. *Analysis of Pile-Reinforced Slopes considering* the effects of soil-structure interaction, 1, 338-347, GEO-RARP 2023, Kolkata Chapter of Indian Geotechnical Society, 2023
- Banerjee, S. and **Bhattacherjee**, **D**. *Numerical Analysis on the stability of rootreinforced soil slopes*, 1, 348-359, GEO-RARP, Kolkata Chapter of Indian Geotechnical Society, 2023
- Rehman, M, Kundu S. and **Bhattacherjee**, **D**., *Numerical Analysis on the Stability of Upstream Mine Tailings Dam under Seismic Loading*, 1-12, Indian Geotechnical Conference (IGC), 2022
- **Bhattacherjee, D**, Viswanadham, BVS., *Centrifuge model studies on geogrid and hybrid geosynthetic reinforced slopes subjected to rainfall*, 1, 221-226, 4th European Conference on Physical Modelling in Geotechnics (ECPMG) 2020 Luleå, Sweden, 2020
- Viswanadham, BVS, Jayanandan, M., Bhattacherjee D., and Kumar P., Performance of Geogrid reinforced soil walls with low permeable backfill: Centrifuge Study, 1, 213-220, 4th European Conference on Physical Modelling in Geotechnics (ECPMG) 2020 Luleå, Sweden, 2020
- Bhattacherjee, D. and Viswanadham, B.V.S., *Prediction of threshold curves for mitigating rainfall induced landslides in low permeable soil slopes*, 1, 77-78, Second ASCE India Conference (CRSIDE 2020), Kolkata; In association with ASCE, India, 2020
- Bhattacherjee, D. and Viswanadham, BVS, Development of a rainfall simulator in centrifuge using Modified Mariotte's principle, 1, 337-342, Physical Modelling in Geotechnics, Volume 1: Proceedings of the 9th International Conference on Physical Modelling in Geotechnics (ICPMG 2018), July 17-20, 2018, London, United Kingdom, 2018
- Bhattacherjee, D. and Viswanadham, B.V.S., *Effect of geosynthetic layers on slopes subjected to rainfall*, Paper ID: FM 031, Young Geotechnical Engineers' Symposium on Finite Element Method (YGESFEM); In association with ISSMGE, DST and IGS Mumbai, Mumbai, India, May 17-18, 2015
- Bhattacherjee, D and Viswanadham, BVS, Some studies on the performance of geocomposite reinforced slopes subjected to rainfall, 2, 1153-1159, Proceedings of the 8th International Conference on Physical Modelling in Geotechnics, Perth, Australia, 14-17 January 2014, Gaudin & White (Eds), Taylor & Francis Group (Pubs.), 2014
- Viswanadham, B.V.S., Guha, A., Sudarshan, B.V., Kundu, S. and Bhattacherjee, D., Centrifuge model tests on the measurement of impact energy on bridge pier foundations embedded in sand, 2, 1061-1066, Proceedings of the 8th International Conference on Physical Modelling in Geotechnics, Perth, Australia, 14-17 January 2014, Gaudin & White (Eds), Taylor & Francis Group (Pubs.), 2014
- Bhattacherjee, D., Balakrishnan, S., and Viswanadham, B.V.S., 2012, Some studies on the seepage analysis of geosynthetic reinforced soil walls constructed with low- permeability backfill soils, Proceedings of the Indian Geotechnical Conference (IGC), Delhi, India, 13-15 December 2012, Vol. 1, pp 347-350, 2012

C) Book Chapters

- Rehman, M., Kundu, S., and **Bhattacherjee, D.**, Numerical Analysis on the Stability of Upstream Mine Tailings Dam under Seismic Loading, Chapter 29, Lecture Notes in Civil Engineering, Vol. 491, Babu T. Jose et al. (Eds), Springer (pubs.), 2024, doi:10.1007/978-981-97-2700-1,
- Ray, P., Ghosh A., and Bhattacherjee, D. Simplified Plane Strain Consolidation Modeling of Stone Column, Soil Dynamics, Earthquake and Computational Geotechnical Engineering, (ISBN: 978-981-19-6997-3), Lecture notes in Civil Engineering, Volume 300, Springer Nature, 2023, https://doi.org/10.1007/978-981-19-6998-0_11
- **Bhattacherjee, D** and Viswanadham, BVS, *Studies on Centrifuge Modelling of Rainfall Induced Landslides*, Dynamics of Soil and Modelling of Geotechnical Problems (ISBN: 978-981-16-5604-0), Lecture notes in Civil Engineering, Volume 186, 207-216, 2022
- **Bhattacherjee, D** and Viswanadham, BVS, Centrifuge Modelling of Marginal Soil Slopes under Rainfall with Hybrid Geosynthetic Inclusions, Springer Singapore, Ground Improvement Techniques (ISBN: 978-981-15-9987-3). Lecture notes in Civil Engineering, Volume 118, 329-338, 2021
- **Bhattacherjee**, **D** and Viswanadham, BVS, Use of hybrid geosynthetics in mitigating rainfall induced slope instability, Geotechnics for Transportation Infrastructure: Recent Developments, Upcoming Technologies and New Concepts (ISBN: 978-981-13-6700-7; doi: 10.1007/978-981-13-6701-4) by Springer Singapore (pubs.)1, 689-702, 2019

(g) Courses Taught

Academic Program	Course
UG B.Tech & Dual Degree	 Ground Improvement Methods Geotechnical Engineering-II Slope Stability and Underground Space Technology Advanced Foundation Design Project Geotechnical Engineering Laboratory Estimation, Valuation and Project Management Introduction to Civil Engineering CAD in Civil Engineering Civil Engineering Materials Laboratory Estimation Practice Sessional General Civil Engineering Problems (Minor Project)
M.Tech & Ph.D.	 Geotechnical Earthquake Engineering Advanced Soil Mechanics Foundation Engineering Geotechnical Model Laboratory Advanced Geotechnical Engineering Project

(h) Seminars/Workshops organized

SI. No.	From	То	Name of the Course(s)	Sponsored by	Participants
1	08.03.2021	12.03.2021	Planning and Design of SustainableTransportation Infrastructures [5-days Webinar]	TEQIP- Phase III	100
2	2 02.08.2019		Studies on the simulation of climaticevents in a geotechnical centrifuge [Technical Lecture]	Department of Civil Engg, IIESTS and IGS Kolkata Chapter	100