ParvatibaiChowgule College of Arts & Science

(Autonomous)

Margao – Goa

MINUTES OF MEETING OF THE BOARD OF STUDIES IN GEOGRAPHY (GEOINFORMATICS)

Parvatibai Chowgule College of Arts & Science
(Autonomous)
Margao – Goa

GEOINFORMATICS 2 YEARS LIST OF COURSES 2024-25 UNDER NEP2020 COURSE STRUCTURE

SEMESTER	COURSE CODE	TITLE OF THE COURSE	NOMENCLATURE/TYPE OF COURSE	CREDITS
3	PGMP-GIS-DSE-501	Applications of GIS in Urban and Regional Planning	DSE	4
	PGMP-GIS-RSE- 501	Advanced Research Methodology	RSE	4
	PGMP-GIS-RSE-502	Research Applications in Resource Management	RSE	4
	PGMP-GIS-RSE-503	Research Applications in Agriculture and Soil	RSE	4
	PGMP-GIS-GE-501	WEB GIS and development of web Application	GE	4
4	PGMP-GIS-I-501	Project/ Internship	I	16
	PGMP-GIS-DSE-502	Applications of GIS in Disaster Management/Agriculture/Urban Planning/Tourism etc. (Online)	DSE	4

POST GRADUATE DEPARTMENT OF GEOGRAPHY
MASTER OF SCIENCE IN GEOINFORMATICS
PROPOSED COURSE STRUCTURE

Course Code	Course Title	Marks Theory and Practical 50+50	Credits (2+2=4)
SEMESTER III			
PGMP-GIS-DSE-501	Applications of GIS in Urban and Regional Planning	**100**	**4**
PGMP-GIS-RSE- 501	Advanced Research Methodology	**100**	**4**
PGMP-GIS-RSE-502	Research Applications in Resource Management	**100**	**4**
PGMP-GIS-RSE-503	Research Applications in Agriculture and Soil	**100**	**4**
PGMP-GIS-GE-501	WEB GIS and development of web Application	**100**	**4**
SEMESTER IV			
PGMP-GIS-I-501	Project/ Internship	**400**	**16**
Elective subject			
PGMP-GIS-DSE-502	Applications of GIS in Disaster Management/Agriculture/Urban Planning/Tourism etc. (Online)	**100**	**4**

Note:

1) Each course will have six instructional contact Credits consisting of two Credits of theory and four Credits of practical

2) Total Marks: 2000 (entire course is divided into 16 courses consisting 100 marks each for 4th semester and a 400 marks project work in 4th semester. Each semester will consist of 20 Credits (1 credit = 25 marks) 2 Credits for theory and 2Credits for practical.

3) Project/ Internship is the part of course PGMP-GIS-I-501.

4) The student should take prior approval from DFC before enrolling for the proposed online course for semester 4 (Online). Maximum four Credits are permissible for ABC transfer.

5) Student can opt any one DSE course for Semester I and II.

PARVATIBAI CHOWGULE COLLEGE OF ARTS AND SCIENCE
M.Sc in Geoinformatics

SEMESTER III			
PGMP-GIS-DSE-501	Applications of GIS in Urban and Regional Planning	**100**	**4**
PGMP-GIS-RSE- 501	Advanced ResearchMethodology	**100**	**4**
PGMP-GIS-RSE-502	Research Applications in Resource Management	**100**	**4**
PGMP-GIS-RSE-503	Research Applications in Agriculture and Soil	**100**	**4**
PGMP-GIS-GE-501	WEB GIS and development of web Application	**100**	**4**

SEMESTER III

Course Title: APPLICATIONS OF GIS IN URBAN AND REGIONAL PLANNING

Course Code: PGMP-GIS-DSE-501

Credits: 04

Marks: 100

Duration 90 Hours

Prerequisite course: NIL

Course objective

- The course is aimed to introduce the concept of urban and regional planning and applications of GIS in it. It consists of collection, processing, analysis and development of solution from urban and regional problems.

Course Learning Outcome

CLO1: Students will describe a remote sensing application and assemble and summarize relevant literature in a written assignment, case study and development of models in various urban environmental activities.

CLO2: Develop a tendency towards research through the compulsory internship in industry /research/ academic institutes which promote and inculcate professional ethics and code of practice among students, enabling them to work in a team with multidisciplinary approach.

CLO3: To be able use these skills to identify and analyzed real world problem and preparing them for a successful career in geospatial industry and research institute.

CLO4:   Be able to demonstrate proficiency in quantitative reasoning and analytical skills

Course content

Mod ule	Topics	Hours	
		T	**P**
		30	**60**
I	• Define urban, Urban area in India, purpose of urban planning, classification of urban settlement, geospatial application urban planning and innovative technology urban planning, National urban information system • Urban land use inventory, urban sprawl growth and trends, network analysis, urban environment analysis and suitability analysis	10	20
II	• Data visualization and mapping design, Visualization for displaying and accessing urban information Groupware in urban planning, web sites for urban planning	10	20

III	• Region, characterization of region, Need for region planning dataset of region planning • Urban landscape changing model Real time information systems for urban environment and risk monitoring	10	20

Reference Book

Mandatory Reading

1. Ayse Pamuk (2008) Mapping Global Cities, GIS Methods In Urban Analysis. ESRI Press. New York
2. Frederick R Steiner and Kent Butter (ed) (2007) Planning and Urban Design Standards, John Wiley and Sons New Jersey, Canada.
3. Juliana Maantay and John Ziegler (2001) GIS for Urban Environment

Supplementary Reading

1. Bhat, L.S. et al: Micro-Level Planning: A Case Study of Karnal Area, Haryana, K. B. Publications, New Delhi, 2001
2. Bhat, L.S.: Regional Planning in India, Statistical Publishing Society, Calcutta, 2000
3. Chorley, R.J. and Haggett, P. (ed): Network Analysis in Geography, Arnold, 2001
4. Edward J Kaiser, David R. Godschalk,(2007)
5. hypothetical City Workbook, Exercise, Spreadsheets, and GIS Data to Accompany Urban Land Use Planning (4th ed) Board of Trustees of University of Illinois, USA
6. Frederick R Steiner and Kent Butter (ed) (2007) Planning and Urban Design Standards, John Wiley and Sons New Jersey, Canada.
7. Juliana Maantay and John Ziegler (2001) GIS for Urban Environment
8. Kuklinski, A.R. (ed.): Growth Poles and Growth Centres in Regional Planning, Mouton, The Hague. 19

Online resources

1. ISO TC 211 (2003) ISO TC 211 homepage. http://www.isotc211.org
2. OGC (2003) The Open Geospatial Consortium Homepage, http://www. opengeospatial.org
3. Open Geospatial Consortium Inc. http://www.opengeospatial.org/docs/02-058.pdf
4. ISO/IEC DIS 14772, 2000, The Virtual Reality Modeling Language: (VRML 97), http://www.vrml.org/technicalinfo/specifications/vrml97/index.htm
5. VRML-Streaming Working group, http://www.web3d.org/WorkingGroups/vrml-streams/

Course Title: Advanced Research Methodology
Course Code: PGMP-GIS-RSE-501
Credits: 04
Marks: 100

Duration 90 Hours

Prerequisite Course: NIL

Course Objectives:

1. The course aims to introduce the students to various research designs and techniques and to identify the sources of information for data collection and literature review.

Course Learning Outcome: After successful completion of the course, students will be able to

CLO1:	Understand the importance of review of literature in research
CLO2:	Develop skills of writing review of literature
CLO3:	Understand and use different referencing skills
CLO4:	Create hypothesis/formulate
CLO5:	Critically assess literature review/research paper

Course content

Module	Topics	Hours	
		T	**P**
		30	**60**
I	**Introduction to Research:** Research and its types, Research process and steps, Essential components of Literature Review, definition of problem, Objectives & strategies of research	**10**	**20**
	Methods of Data Collection : Types of data collection and classification, designing questionnaires and schedules, digital organization of data, preprocessing		
II	**Sampling Methods:** Probability sampling, random sampling, systematic sampling, stratified sampling and cluster sampling Non-probability sampling, quota sampling	**10**	**20**
	Data Analysis: Statistical measures and their significance: Central tendencies, variation, skewness, Kurtosis, time series analysis, correlation and regression, Testing of Hypotheses: Chi Square, ANOVA		
III	**Report writing:** Pre writing considerations, Format of report writing, Abstract Writing, Synopsis Writing, Thesis writing, Chapterization, Format of publications in research journals.	**10**	**20**

References book

Mandatory Reading

1. Kothari C.K. (2004), 2/e, Research Methodology- Methods and Techniques (New Age International, New Delhi)
2. Hira, D.S. System Simulation, S. Chand & Co., New Delh.
3. B.E. Vieux (2005). Distributed Hydrologic Modeling Using GIS, ISBN-13: 978-0792370030
4. Proctor, T. (2003) "Essentials of Marketing Research", 3rd edition, Prentice Hall

Supplementary Reading

1 Montgomery, Douglas C. (2007), 5/e, Design and Analysis of Experiments, (Wiley India)
2 Montgomery, Douglas C. &Runger, George C. (2007), 3/e, Applied Statistics &Probability for Engineers (Wiley India)
3 Krishnaswamy, K.N., Sivakumar, AppaIyer and Mathiranjan M. (2006), Management Research Methodology; Integration of Principles, Methods and Techniques (Pearson Education, New Delhi)
4 Hira, D.S. System Simulation, S. Chand & Co., New Delh.
5 B.E. Vieux (2005). Distributed Hydrologic Modeling Using GIS, ISBN-13: 978-0792370030
6 Proctor, T. (2003) "Essentials of Marketing Research", 3rd edition, Prentice Hall

Web reference

1. https://www.scribbr.com/dissertation/methodology/
2. https://www.researchgate.net/publication/270956555_CHAP TER_3_-_RESEARCH_METHODOLOGY_Data_collection_method_and_Research_tools
3. https://research-methodology.net/research-methodology/
4. Adapted from: Miles & Huberman (1994, p. 40). QualitativeData Analysis, available at http://wilderdom.com/research/QualitativeVersusQuantitativeResearch.html
5. **https://elearning.iirs.gov.in/https://elearning.iirs.gov.in/**
6. **https://www.esri.com/en-us/home**
7. **https://www.intergraph.com/**
8. **https://www.sac.gov.in/Vyom/index.jsp**

Course Title: RESEARCH APPLICATIONS IN RESOURCE MANAGEMENT
Course Code: PGMP-GIS-RSE-502
Credits: 04
Marks: 100

Duration 90 Hours

Prerequisite course: NIL
Course objective

1. The course is aimed to introduce the concept of land, water and coastal management. Taxation and to learn how GIS can be applied in resource management sector.

Course Learning Outcome: After successfully completion of the course, students will be able to

CLO1:   Understanding importance of nature resources and its categorizes
CLO2: To be able use these skills to identify and analyzed real world problem and preparing them for a successful career in geospatial industry and research institute
CLO3: Acquire of fundamental and advanced knowledge of the different aspect in Geoinformatics with the means ability to specialize in a specific field.
CLO4: Develop a tendency towards research through the compulsory internship in industry /research/ academic institutes which promote and inculcate professional ethics and code of practice among students, enabling them to work in a team with multidisciplinary approach.

Course content

Module	Topics	Hours	
		T	**P**
		30	**60**
I	• **Techniques for research in** forest resource Management Cadastral Mapping, Land Registration Workflow, Parcel management, Land Parcel Data Model, data capture, data management and processing	10	20
II	• **Techniques for research in** Land Capability Mapping and Limitations, Public Access, Land classifications, Land use planning, Taxation	10	20
III	• **Techniques for research in** Water Resources- Watershed Management, Flood management and Damage Assessment, Zone Mapping, Groundwater recharge mapping, Water Quality, Watershed Erosion Modeling	10	20

Reference Books:

Mandatory Reading

1. Michael G. Wing, Pete Bettinger (2008),Geographic Information Systems: Applications in Natural Resource Management, Oxford University Press, USA

Supplementary Reading

1. Ali S.A. Resources for Future Economic Growth, Vikas Publications House, New Delhi, 2004.
2. Ress J. Natural Resources, Allocation, Economics & Policy, Rout Ledge, London, 2000.
3. Turner R.K. Sustainable Environmental Management, Belhaven Press, London, 2006.
4. Nancy von Meyer (2004), GIS and Land Records, ESRI press
5. Laura Lang (2004), Managing Natural Resources with GIS, ESRI Press, ISBN 1-879102-53-6
6. Roger Tomlinson (2007), Thinking about GIS, ESRI Press
7. John G. Lyon (2002). GIS for Water Resource and Watershed Management, Taylor & Francis

Web reference

1. ISO TC 211 (2003) ISO TC 211 homepage. http://www.isotc211.org
2. OGC (2003) The Open Geospatial Consortium Homepage, http://www. opengeospatial.org
3. Open Geospatial Consortium Inc. http://www.opengeospatial.org/docs/02-058.pdf
4. ISO/IEC DIS 14772, 1997, The Virtual Reality Modeling Language: (VRML 97), http://www.vrml.org/technicalinfo/specifications/vrml97/index.htm

VRML-Streaming Working group, http://www.web3d.org/WorkingGroups/vrml-streams/

Course Title: Research Applications in Agriculture and Soil
Course Code: PGMP-GIS-RSE-503
Credits: 04
Marks: 100

Duration 90 Hours

Prerequisite   NIL

Course objective

1. The course is aimed to introduce the concept of Agriculture, Soil and land management. Develop model and decision support system for different Agriculture system.

Course Learning Outcome: After successfully completion of the course, students will be able to

CLO1: Understanding importance of Agriculture resources and its categories.
CLO2: To be able use these skills to identify land use and land cover problem.
CLO3: Develop and built application in agriculture sector.
CLO4:   Critically think geospatial technology aspect.

Course content

Module	Topics	Hours T 30	P 60
I	**Techniques for research in Agriculture** -Spectral characteristic of crop, crop inventory ,crop yield modeling , crop water management, agro ecological zoning	10	20
II	**Techniques for research in Soil**– crop acreage and production estimation model, ground water potential zone ,recharge and identification	10	20
III	**Techniques for research in Land** -Land evaluation, physiographic soil mapping, soil type identification, soil moisture mapping	10	20
	Case study- Review case studies in Geosciences, Water Recourse, Agriculture, Soil		

Reference Books:

Mandatory Reading

1. Vincent RK (2000) Fundamentals of Geological and Environmental Remote Sensing New Jersey: Prentice Hall
2. Kondratyev K Ya, Buznitov AA and Pokrovoky OM (2000). Global Change and Remote Sensing: John Wiley and Sons.
3. Roy, P.S. Geoinformatics for Tropical Ecosystems Bishen Singh Mahendra Pal Singh, Dehradun
4. Skidmore Andrew (2000) Environmental Modeling with GIS and Remote Sensing Taylor and Francis

Supplementary Reading

1. Cracknell A P(ed) (2000) Remote Sensing in Meteorology, Oceanography and Hydrology. Chichester: Ellis Horwood Limited
2. Damen MCJ, Sicco Smith G and Kerstappen(Ed) (2004) Remote Sensing for Resources Development and Environmental Management 3rd.volume Set Netherlands: Balkema
3. *Jensen, J.R. (2000). Remote sensing of the environment: an Earth resource perspective. Prentice Hall. ISBN 0-13-609733-1.*
4. Kondratyev K Ya, Buznitov AA and Pokrovoky OM (2000). Global Change and Remote Sensing: John Wiley and Sons.
5. Roy, P.S. Geoinformatics for Tropical Ecosystems Bishen Singh Mahendra Pal Singh, Dehradun
6. Skidmore Andrew (2000) Environmental Modeling with GIS and Remote Sensing Taylor and Francis
7. Steven MD and Clark JA (2001). Applications of Remote Sensing in Agriculture London Butterworths.

Web reference

https://elearning.iirs.gov.in/https://elearning.iirs.gov.in/
https://www.esri.com/en-us/home
https://www.intergraph.com/
https://www.sac.gov.in/Vyom/index.jsp
https://bhuvan.nrsc.gov.in/bhuvan_links.php
https://glovis.usgs.gov/
https://www.nrsc.gov.in/EO_Agr_Objective
https://www.nrsc.gov.in/aboutus_campus_nrscrc/rrsc_east?language_content_entity=en
https://www.iirs.gov.in/

Course Title: WEB GIS AND DEVELOPMENT OF WEB APPLICATION
Course Code: PGMP-GIS-GE-501
Credits: 04
Marks: 100

Duration 90 Hours

Prerequisite course: Passing of competency test is Mandatory Reading (40%)

Course Objective:

1. Provide students with a comprehensive and up-to-date overview of Web GIS, including the basic concepts, principles, related fields (e.g. mobile GIS) and frontiers.
2. Provide students with the state-of-art technical skills to build Web GIS applications and the knowledge needed to choose from various Web GIS development options.

Course Learning Outcome:

After Successful completion of the course, students will be

CLO1: Critically assess the organizational benefits and challenges of developing Web GIS applications;
CLO2: Explain the difference between Web GIS, geospatial web services, mashups, mobile GIS solutions, geoportals, and how these are applicable to e-business and e-government;
CLO3: Evaluate current technologies or architectures that support Web GIS;
CLO4: Design and implement an independent Web GIS application.

Course content

Module	Topics	Hours T 30	P 60
I	**Web Based Architecture and Scripting Environments**	10	20
	Roles of Clients & Servers, Basics of web GIS, Architecture, geospatial web services, OGC, Open source and proprietary web-based scripting and mapping environments, KML, GeoJSON, and other formats for drawing vector data in the browser,		
II	Application Programming Interfaces (APIs), GeoServer, NSDI, Census GIS, BHUVAN, Crowd Sourcing.	10	20
III	**Mobile GIS and Open Data Kit**	10	20
	Architecture of Mobile GIS, Operating systems for Mobile GIS, Wireless web, customization of Mobile GIS, softwares, Libraries, SDK packages and advantages,		

Reference Books:

Mandatory Reading

1. DuVander A 2010. Map Scripting 101: An Example-Driven Guide to Building Interactive Maps with Bing, Yahoo!, and Google Maps
2. Markus Neteler And Helena Mitasova (2007): Open Source GIS: A GRASS approach, Springer-Verlag Berlin, Heidelberg
3. Andrew Cutts, Anita Graser (2018): Learn QGIS ,

Supplementary Reading

1. PindeFu,(2018) Getting to Know Web GIS,(3rd Ed),Esri Press, Redlands, CA.
2. Markus Neteler And Helena Mitasova (2007): Open Source GIS: A GRASS approach, Springer-Verlag Berlin, Heidelberg
3. Andrew Cutts, Anita Graser (2018): Learn QGIS ,

Online resources

1. https://www.packtpub.com/application development/learn-qgis-fourth-edition
2. ArcGIS Resource Center Web APIs, http://resources.arcgis.com/content/web/web-apis
3. ArcGIS JavaScript APIs, http://help.arcgis.com/en/webapi/javascript/arcgis/
4. ArcGIS JavaScript API Samples, https://developers.arcgis.com/en/javascript/jssamples
5. https://mangomap.com/web-gis

PGMP-GIS- I 501	**Project / Internship**	**400**	**16**
PGMP-GIS-DSE-502	Applications of GIS in Disaster Management/Agriculture/Urban Planning/Tourism etc. (Online)	**100**	**4**

DISSERTATION/INTERNSHIP

1) the Dissertation/Internship shall be spread over the Third and/or Fourth Semesters. However, in case of two-year Programmes, the DFC may consider reducing it to one Semester if the student is eligible to complete the Masters Programme in Three Semesters.
2) The DFC shall decide the modalities relating to Dissertation/Internship.
3) The topic of the Dissertation shall be finalized by the student in consultation with the Research Supervisor/Research Mentor by the beginning of the Academic Year in which they are pursuing their Dissertation.
4) The DFC shall decide the distribution/number of students to be allotted to a Research Supervisor.
5) A student shall declare, in the prescribed proforma, that the Dissertation is her/his own original work and that all the sources used are duly acknowledged.
6) The Research Supervisor shall certify, in the prescribed proforma, that the Dissertation is a work of the student completed under her/his supervision.
7) A student shall submit their Dissertations to the School /College through the Research Supervisor not later than one week before the end of the Semester. Ordinarily, no student shall be permitted to submit the Dissertation after the due date.
8) A student shall submit a soft copy and a spiral bound copy of the Dissertation to the College in the standard format as notified by Goa University for the Project is the part of paper **PGMP-GIS- I 501.** Fourth semester is fully devoted to project work.
9) Project will cover 300 Credits and 4month durations
10) The student for the fulfillment of M.Sc.- Geoinformatics must carry outIndividual dissertation work.
11) Comprehensive Viva Voce
12) Viva Voce will be conducted to the student by Department on the topic of the dissertation carried out by the student.

Guidelines for Dissertation

1	Problem identification and literature review	Credits 3
2	Data acquisition and collection	Credits 2
3	Field work	Credits 3
4	Data processing	Credits 2
5	Result and interpretation	Credits 2
6	Report writing	Credits 2
7	Presentation	Credits 2

SEMESTER III

Course Title: APPLICATIONS OF GIS IN DISASTER MANAGEMENT/AGRICULTURE/ URBAN PLANNING/ TOURISM ETC**. (ONLINE)**

Course Code: PGMP-GIS-DSE-502

Credits: 04

Marks: 100

Duration : 90 Hours

Prerequisite courses: NIL

Course objectives:

1. Provide students with the state-of-art technical skills to build disaster and hazard applications.
2. This course helpful in mitigation strategies and preparedness plans. Real time geographic data can improve the allocation of resources for response. A GIS technology is much useful in modelling of disaster risks and human adaptations to hazards.

Course outcome:

After completion of this course, students will be able to:

CLO1: Be equipped with practical skills and the ability to apply their theoretical concept to design, perform experiments, analyze and interpret data and thus develop proficiency in lab management.

CLO2:   It is provides decision support system in disaster management and making model reduce risk and Hazard. Students will handle different disaster project like Flood, landslideing, fire and drought.

CLO3: To be able use these skills to identify and analyzedDisaster and preparing them for a successful career in geospatial industry and research institute.

CLO4: Acquire of fundamental and advanced knowledge of the different aspect in Geoinformatics with the means ability to specialize in a specific field.

Course content

Hours

Module	Topics	L 30	P 60
I	• Disaster management, types of hazard and disaster, risk and vulnerability assessment	10	20
II	• Disaster management measures –Structural and Non-structuraldisaster,prevention,mitigation,preparedness,response,recovery and rehabilitation, Disaster zonation of world –climatic, geological &Geomorphologic hazard	10	20
III	• Strategies of risk reduction –disaster preparedness, support system, organization,awareness programs,disaster policy and planning in India • Case study –landslide,flood,cyclone and drought	10	20

Reference   Books

Mandatory Reading

1. Alexander, D. (1993). Natural disasters. UCL Press Ltd., University College London. 632.
2. Van Westen, C.J. (1993) Application of Geographic Information Systems to Landslide Hazard Zonation. ITC-Publication Number 15, ITC, Enschede, The Netherlands, 305 pp.
3. Pelling, M. (2003). The Vulnerability of Cities: Natural Disaster and Social Resilience, Earthscan, London.
4. Pike, R.J., (2000). Geomorphometry - diversity in quantitative surface analysis. Progress in Physical Geography 30 (1), 1-20.

Supplementary Reading

1 Adler, R.F. and A.J. Negri, 1988. A satellite infrared technique to estimate tropical convective and stratiform rainfall. J. Appl. Meteorol., 27: 30-51.
2 Anagnostou, E.N., A.J. Negri and R.F. Adler, 1999. A satellite infrared technique for diurnal rainfall variability studies. J. Geophy. Res., 104: 31477-31608.
3 Barrett, E.C., (1996) The storm project: using remote sensing for improved monitoring and prediction of heavy rainfall and related events. Remote Sensing Reviews, vol 14, 282 pp.
4 Van Westen, C.J. (1993) Application of Geographic Information Systems to Landslide Hazard Zonation. ITC-Publication Number 15, ITC, Enschede, The Netherlands, 305 pp.
5 Pelling, M. (2003). The Vulnerability of Cities: Natural Disaster and Social Resilience, Earthscan, London.

6   Pike, R.J., (2000). Geomorphometry - diversity in quantitative surface analysis. Progress in Physical Geography 30 (1), 1-20.

Online resources

1) https://www.nrsc.gov.in/
2) https://www.iirs.gov.in/
3) http://www.undp.org/popin/wdtrends/wdtrends.htm
4) https://www.isprs.org/proceedings/xxxiii/congress/part7/1609_XXXIII-part7.pdf
5) http://www.tric.u-tokai.ac.jp/ISPRScom8/TC8/TC8_CD/headline/JAXA_Special_Session%20-%206/JTS64_20100608144600.pdf
6) https://www.semanticscholar.org/paper/Role-of-Remote-Sensing-in-Disaster-Management-Nirupama-Simonovic/da84562b2057ca5866d933d47ee8815a06f0229c