MSCGI

Assignment Booklet

MSC GEOINFORMATICS (MSCGI)

ASSIGNMENTS

JULY 2024 & JANUARY 2025 CYCLES

Valid from July 1, 2024 to June 30, 2025

Tutor Marked Assignments (TMA) for **Semester-III** Courses

MGY-009
MGY-010 &
MGY-011

It is compulsory to submit the Assignments before filling in the Term-End Examination (TEE) Form

School of Sciences
Indira Gandhi National Open University
Maidan Garhi, New Delhi-110 068 (INDIA)

(July 2024 – June 2025)

Dear Learner,

Welcome to the MSc Geoinformatics (MSCGI) Programme.

As per the laid down guidelines of the University, you need to complete the assignment for each course. Each assignment has 6 to 9 questions. All the questions are compulsory. It is important that you should write the answers to all the questions in your own words. You should remember that writing answers to assignment questions will improve your writing skills and prepare you for the term-end examination.

This booklet includes assignments for the following three courses:

MGY-009: Advances in Remote Sensing and GIS

MGY-010: Computer Programming for Digital Image Processing and GIS

MGY-011: Geoenvironmental Applications of Geoinformatics

It is compulsory to submit the assignments within the stipulated time to be eligible for appearing the term-end examination. You will not be allowed to appear for the term-end examination for a course if you do not submit the assignment for that course within the due date. As per the University guidelines, if you appear in the term-end examination of a course without submitting its assignment, the result of the term-end examination is liable to be cancelled/ withheld.

The assignments constitute the continuous component of the evaluation process and have 30% weightage in the final grading.

Before you write the assignments, first go through the course material and then prepare the assignments carefully by following the instructions pertaining to assignments. Your responses should not be a verbatim reproduction of the textual materials provided for self-learning purposes but it should be in your own words.

If you have any doubt or problem pertaining to the course material and assignments, contact the concerned Programme in-charge or Academic Counsellor at your Study Centre. If you still have problems, do feel free to contact us at the School of Sciences, IGNOU, New Delhi.

Wishing you all the best to successfully complete the programme.

Programme Coordinator
MSCGI
School of Sciences
e-mail: pgcgi@ignou.ac.in

INSTRUCTIONS

1. On the first page of the assignment response sheet, write the course code, course title, assignment code, name of your study centre (SC) and date of submission.
2. Your enrollment number, name and full address should be mentioned on the top right corner of the first page.
3. Write the Course title, assignment number and the name of the study centre you are attached to, in the centre of the first page of your response sheet.
4. The top of the first page of your response sheet should be like the following:

NAME: ….....…….....……..…….....

ENROLLMENT NO.: .....…….....

CYCLE OF ADMISSION: …..…….....…….....

PROGRAMME CODE: .....…….....

ASSIGNMENT CODE: ……..…….....

COURSE CODE: …….....……..…….....

COURSE TITLE: ……..…….....……..…….....

REGIONAL CENTRE CODE: ..... …….....

STUDY CENTRE: .....…….....

ADDRESS: …….....……..……..…….....……..…….....

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CONTACT NUMBER: .....…….....

DATE OF SUBMISSION: ……..…….....……..…….....

Strictly follow the above format. If you do not follow this format, your script will be returned to you and you will be asked for re-submission.

5. Read the instructions related to assignments given in the Programme Guide.
6. Please note that unless you submit the assignments contained in this booklet within the stipulated time, you would not be permitted to appear for the term-end examination.

Note the following points before you start writing the assignments:

- Use only A-4 size paper for writing your responses. Only hand written assignments will be accepted. **Typed or printed copies of assignments will not be accepted.**
- Tie the pages after numbering them carefully.
- Write the question number for each answer.
- All the questions are compulsory.
- Keep a copy of the assignment answer sheets with you before submission for future reference.
- Answer each assignment on separate sheet.
- It is mandatory to write all assignments neatly in **your own handwriting. Write Your Name, Course Code, Enrollment No. and Cycle of admission** on all the assignments in bold letters**.**
- **Express your response in your own words. You are advised to restrict your response based on the marks assigned to it. This will also help you to distribute your time in writing or completing your assignments on time.**
- **The assignment has to be submitted at your Study Centre.**

You have to submit their completed assignments at the **Study Centre** allotted to you before the due date as set by the University.

It is desirable to keep with you a photocopy of the assignment(s) submitted by you.

*You have to submit the assignments to the Study Centre by **30th September, 2024** (for July 2024 cycle) if you wish to appear in the December 2024 TEE and **31st March, 2025** (for January 2025 Cycle) if you wish to appear in the June 2025 TEE.

Due Date of Submission*: For July 2024 Cycle: September 30, 2024
For January 2025 Cycle: March 31, 2025

*Please note that last date of submission may be changed by the University. Please check IGNOU website for updated information regarding due date of assignment submission.

Tutor Marked Assignment

MGY-009: Advances in Remote Sensing and GIS

Course Code: MGY-009
Assignment Code: MGY-009/TMA/2024-25
Max. Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it. Write all answers in your own words; do not copy from the Self Learning Materials (SLMs). Write your answers in about 200 and 400 words for short notes and long answers, respectively.

Part A

1. Discuss the techniques of thematic information extraction from hyperspectral data. (10)
2. What is object based image analysis? Discuss the major steps involved in the object based image analysis. (10)
3. Write short notes on the following:
   a) Spatial feature manipulation in multispectral data (5)
   b) Trends in LiDAR data processing (5)
   c) Trends in microwave data preprocessing (5)
   d) Need for expert systems (5)
   e) Data as a Service (5)
   f) Bhuvan platform as a Service (5)

Part B

4. What are location-based services? Discuss applications of location-based services giving suitable examples. (10)
5. Describe the need and development of the Spatial Data Infrastructure. Add a note on national and global Spatial Data Infrastructures. (10)
6. Write short notes on the following:
   a) WebGIS and IoT (5)
   b) GIS Customisation (5)
   c) Indian Geospatial Ecosystem (5)
   d) National Geospatial Policy, 2022 (5)
   e) Indian Geospatial Standards (5)
   f) Commonly used programming languages for GIS customisation (5)

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Tutor Marked Assignment

MGY-010: Computer Programming for Digital Image Processing and GIS

Course Code: MGY-010
Assignment Code: MGY-010/TMA/2024-25
Max. Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it. Write all answers in your own words; do not copy from the Self Learning Materials (SLMs). Write your answers in about 200 and 400 words for short notes and long answers, respectively.

Part A

1. Write short notes on the following:
   a) Thematic information extraction in GEE (5)
   b) Image preprocessing using R (5)
2. Describe the role of Google Earth Engine in raster data processing and visualisation. (10)
3. Give an account of GIS processing in Google Earth Engine. (10)

Part B

4. Write short notes on the following:
   a) Image classification using R (5)
   b) GIS customisation using Python (5)
   c) Scope of MapServer in web mapping (5)
5. Discuss the use of R in image transformation giving suitable examples. (10)
6. Explain the scope of Python programming in geospatial analysis. (10)

Part C

7. Write short notes on the following:
   a) Customisation of applications using OpenLayers (5)
   b) Role of R in generating different kinds of plots of single and multiple data (5)
   c) Statistical analysis using R (5)
8. How is R useful in handling vector data and its analysis? Support your answer with suitable examples. (10)
9. What are PostGIS and PostGreSQL? Describe their role in building and managing database. (10)

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Tutor Marked Assignment

MGY-011: Geo-environmental Applications of Geoinformatics

Course Code: MGY-011
Assignment Code: MGY-011/TMA/2024-25
Max. Marks: 100

Note: Attempt all questions. The marks for each question are indicated against it. Write all answers in your own words; do not copy from the Self Learning Materials (SLMs). Write your answers in about 200 and 400 words for short and long answers, respectively.

Part A

1. Give an account of mapping landforms using remote sensing data. (10)
2. What is groundwater depletion? Discuss the data and methods suitable for groundwater potential zone mapping. Support your answer with the help of neat well labelled diagrams, wherever necessary. (10)
3. Write short notes on the following:
   a) Recent developments in mineralogical mapping and exploration using remote sensing data (5)
   b) Digital terrain analysis (5)
   c) Application of drone technology in mapping inland waters (5)
   d) Applications of watershed mapping related applications (5)
   e) Recent developments in land degradation studies (5)
   f) Image features characterising gently or moderately dipping sedimentary rocks in a terrain (5)

Part B

4. Discuss the different approaches for the assessment of coastal vulnerability. (10)
5. Examine the role of geoinformatics in ecological applications with emphasis on mapping terrestrial habitats, ecosystems and protected areas. (10)
6. Write short notes on the following:
   a) Urban heat island (5)
   b) Role of geoinformatics in atmospheric applications (5)
   c) Application of geoinformatics in studying urban sprawl (5)
   d) Recent trends in Ocean Colour Remote Sensing (5)
   e) Habitat suitability analysis using geoinformatics (5)
   f) Scope of geoinformatics in mapping marine protected areas (5)

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