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-II** Courses

MGY-005
MGY-006 &
MGY-007

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-005: Techniques in Remote Sensing and Digital Image Processing

MGY-006: Spatial Analysis and Modelling

MGY-007: 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-005: Techniques in Remote Sensing and Digital Image Processing

Course Code: MGY-005
Assignment Code: MGY-005/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) Application of multispectral remote sensing (5)
   b) Microwave remote sensing data processing (5)
2. Discuss principles and application potential of hyperspectral remote sensing. Add a note on its data products. (10)
3. What is LiDAR remote sensing? Explain its principles, components and data types. (10)

Part B

4. Write short notes on the following:
   a) Image-to-map rectification (5)
   b) Principal component analysis (5)
   c) Systematic radiometric errors and their corrections (5)
5. What is image statistics? Explain the univariate and multivariate image statistics in detail. (10)
6. Give an account of various image enhancement techniques. (10)

Part C

7. Write short notes on the following:
   a) Role of AI in image classification (5)
   b) Supervised classification (5)
   c) Error matrix and its generation (5)
8. What is change detection? Describe various types of change detection techniques. (10)
9. Discuss the scope of R programming in raster data processing giving suitable examples. (10)

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Tutor Marked Assignment

MGY-006: Spatial Analysis and Modelling

Course Code: MGY-006
Assignment Code: MGY-006/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. What do you understand by data integration? Discuss the contributions of remote sensing in integration with GIS. (10)

2. Describe database models and database modelling. Give an account of various types of database models. (10)

3. Write short notes on the following:

   a) Stages of data integration (5)
   b) Characteristics of a good DBMS (5)
   c) Semivariogram (5)
   d) Spatial distance measurement (5)
   e) Applications of buffer analysis (5)
   f) Pattern analysis and its application (5)

Part B

4. What is network analysis? Discuss in detail different methods of network analysis. (10)

5. Compare static and dynamic models. Give an account of dynamic modelling in GIS. (10)

6. Write short notes on the following:

   a) Methods and applications of local operation (5)
   b) Steps in development of a model (5)
   c) Factors influencing watershed analysis (5)
   d) GIS system development life cycle (5)
   e) Models of GIS design (5)
   f) Advantages of developing GIS programming skills (5)

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Tutor Marked Assignment

MGY-007: Applications of Geoinformatics

Course Code: MGY-007
Assignment Code: MGY-007/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. Provide a comprehensive analysis of how moisture affects the spectral signature of soil. Support your answer with well labelled diagrams, wherever required. (10)

2. What is land use land cover? Discuss various land use land cover categories and their spectral characteristics. (10)

3. Write short notes on the following:
   a) Different pigments found in leaves and their unique spectral signatures (5)
   b) Factors influencing spectral properties of water (5)
   c) Applications and challenges surrounding land use/land cover change modelling (5)
   d) Satellite remote sensing based monitoring of rainfall (5)
   e) Limitations of geoinformatics in the context of climate change study (5)
   f) Role of remote sensing in vegetation/forest type mapping (5)

Part B

4. Discuss in detail how geoinformatics is used in landslide related studies. (10)

5. Examine the role of geoinformatics in different domains of defence sector. (10)

6. Write short notes on the following:
   a) Potential of geoinformatics in managing forest fire and coal fire incidents (5)
   b) Use of remote sensing in monitoring oil spills (5)
   c) Application of geoinformatics in monitoring disease outbreaks and their transmission (5)
   d) Enumerate use of GIS in urban planning (5)
   e) Advantage of microwave remote sensing over optical remote sensing for monitoring of crops and assessment of their condition (5)
   f) Advantages and applications of geoinformatics in the study of meteorological disasters (5)

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