DIRECTORATE OF COLLABORATIVE PROGRAMMES

ALAGAPPA UNIVERSITY

(A State University Reaccredited With'A' Grade By NAAC)

KARAIKUDI

DIPLOMA IN LAND SURVEY ENGINEERING

Regulations And Syllabus

[For Those Who Join The Course In July 2019 And After]

GENERAL INSTRUCTIONS AND REGULATIONS

Diploma InLand Survey Engineering Conducted By Alagappa University, Karaikudi, Tamil Nadu Through Its Collaborative Institution.
Applicable To All The Candidates Admitted From The Academic Year **2019** Onwards.

1. **Eligibility**

   A Pass In The HSC Examination Conducted By The Government Of Tamil Nadu, Or An Examination Accepted As Equivalent Thereto By The Syndicate. Candidate For Admission To **Diploma In Land Survey Engineering** Shall Be Required To Have Passed Qualifying Examination.

2. **Admission**

   Admission Is Based On The Marks In The Qualifying Examination.

3. **Duration Of The Course**

   The Course Shall Extend Over A Period Of **One Year** Under Non-Semester Pattern.

4. **Standard Of Passing And Award Of Division**
   a. Students Shall Have A Minimum Of 40% Of Total Marks Of The University Examinations In Each Subject. The Overall Passing Minimum Is 40% Both In External And Aggregate Of Continuous Internal AssessmentAnd External In Each Subject.
   b. The Minimum Marks For Passing In Each Theory / Lab Course Shall Be 40% Of The Marks Prescribed For The Paper / Lab.
   c. A Candidate Who Secures 40% Or More Marks But Less Than 50% Of The Aggregate Marks, Shall Be Awarded **THIRD CLASS.**
   d. A Candidate Who Secures 50% Or More Marks But Less Than 60% Of The Aggregate Marks, Shall Be Awarded **SECOND CLASS.**
   e. A Candidate Who Secures 60% Or More Of The Aggregate Marks, Shall Be Awarded **FIRST CLASS.**
   f. The Practical / Project Shall Be Assessed By The Two Examiners, By An Internal Examiner And An External Examiner.

5. **Continuous Internal Assessment**
   a. Continuous Internal Assessment For Each Paper Shall Be By Means Of Written Tests, Assignments, Class Tests And Seminars
   b. **25 Marks** Allotted For The Continuous Internal Assessment Is Distributed For Written Test, Assignment, Class Test And Seminars.
   c. Two Internal Tests Of 2 Hours Duration May Be Conducted During The Semester For Each Course / Subject And The Best Marks May Be Considered And One Model Examination Will Be Conducted At The End Of The Semester Prior To University Examination. Students May Be Asked To Submit At Least Five Assignments In Each Subject. They Should Also Participate In Seminars Conducted For Each Subject And Marks Allocated Accordingly.

d. Conduct Of The Continuous Internal Assessment Shall Be The Responsibility Of The Concerned Faculty.
e. The Continuous Internal Assessment Marks Are To Be Submitted To The University At The End Of Every Year.
f. The Valued Answer Papers/Assignments Should Be Given To The Students After The Valuation Is Over And They Should Be Asked To Check Up And Satisfy Themselves About The Marks They Have Scored.
g. All Mark Lists And Other Records Connected With The Continuous Internal Assessments Should Be In The Safe Custody Of The Institution For At Least One Year After The Assessment.

6. Attendance

Students Must Have Earned 75% Of Attendance In Each Course For Appearing For The Examination.

Students Who Have Earned 74% To 70% Of Attendance To Be Applied For Condonation In The Prescribed Form With The Prescribed Fee.

Students Who Have Earned 69% To 60% Of Attendance To Be Applied For Condonation In The Prescribed Form With The Prescribed Fee Along With The Medical Certificate.

Students Who Have Below 60% Of Attendance Are Not Eligible To Appear For The Examination. They Shall Re-Do The Semester(S) After Completion Of The Programme.

7. Examination

Candidate Must Complete Course Duration To Appear For The University Examination. Examination Will Be Conducted With Concurrence Of Controller Of Examinations As Per The Alagappa University Regulations. **University May Send The Representatives As The Observer During Examinations.** University Examination Will Be Held At The End Of The Each Semester For Duration Of 3 Hours For Each Subject. Certificate Will Be Issued As Per The AU Regulations. **Hall Ticket Will Be Issued To The Candidates Upon Submission Of The List Of Enrolled Students Along With The Prescribed Course Fee.**

8. Question Paper Pattern

Maximum 75 Marks	Duration3Hours
Part A - Short Answer Questions With No Choice	10 X 02=20
Part B – Brief Answer With Either Or Type	05 X 05=25
Part C- Essay – Type Questions Of Either / Or Type	03 X 10=30

9. Miscellaneous

a. Each Student Posses The Prescribed Text Books For The Subject And The Workshop Tools As Required For Theory And Practical Classes.
b. Each Student Is Issued With An Identity Card By The University To Identify His / Her Admission To The Course
c. Students Are Provided Library And Internet Facilities For Development Of Their `Studies.
d. Students Are To Maintain The Record Of Practicals Conducted In The Respective Laboratory In A Separate Practical Record Book And The Same Will Have To Be Presented For Review By The University Examiner.
e. Students Who Successful Complete The Course Within The Stipulated Period Will Be Awarded The Degree By The University.

10. Fee Structure

Course Fee Shall Be As Prescribed By The University And 50% Of The Course Fee Should Be Disbursed To University. Special Fees And Other Fees Shall Be As Prescribed By The Institution And The Fees Structure Must Intimated To The University. Course Fees Should Be Only By Demand Draft / NEFT And AU Has Right To Revise The Fees Accordingly.

Non-Semester Pattern

Examination	Course Fee Payment Deadline
April / May	Fee Must Be Paid Before 10thFebruaryOf The Academic Year

11. Other Regulations

Besides The Above, The Common Regulation Of The University Shall Also Be Applicable To This Programme.

Course Structure

S. No	Study Components	Int.	Ext.	Marks	No. Of Subjects	Total
1.	Core Course	25	75	100	3	300
2.	Allied Course	25	75	100	2	200
3.	Elective Course	25	75	100	1	100
	TOTAL	-	-	-	6	600

Subject Code	Subject	Internal	External	Total
11	Basic of Surveying& Compass Surveying	25	75	100
12	Engineering Surveying	25	75	100
13	Modern Surveying	25	75	100
14	Chain Surveying & Compass Surveying - **Practical**	25	75	100
15	Leveling & Theodolite Surveying - **Practical**	25	75	100
16	Total Station & Gps - **Practical**	25	75	100
Total				**600**

11 Basic Of Surveying&Compass Surveying

Unit – I Introduction Of Surveying

Definition – Object Of Surveying – Use Of Surveyng – Classification Of Surveying – General Priniciple Surveying – Unite Of Measurments – Plans And Maps – Scale – Surveying Character Of Work – Accuracy And Errors – Liner Measurments – Different Methods – Direct Measurments – Instruments For Chainig – Ranging Out Survey Lines – Chainning – Chainning On Uneven Or Sloping Ground – Errors In Chainning – Tape Corrections

Unit – IIChain Surveying

Introduction – Instruments Used For Chaining – Chaines And Tape Types – Definitions Of Terms Commonly Used In Chain Surveying – Survey Stations , Base Line , Check Line And Tie Line – Ranging – Direct And Indirect Ranging – Offsets – Definition , Types , Instruments Used And Procedure Of Taking An Offset – Conventional Signs – Chain Surveying Equipments Required , Field Work And Recording Field Notes – Errors In Chaining – Obstacles In Chaining – Types And Problems – Tape Correction Simple Problems

Unit – III Compass Surveying

Indroduction And Purpose – Definitions – Principale Of Compass Surveying – Traversing – Methods Of Traversing – Check On Closed Traverse – Check On Open Traverse - Types Of Compass – Temporary Adjustment Of Prismatice Compass – Problems Whole Circle Bearing And Quadrantal Bearing – Problems On Fore And Back Bearing, Including Angle, Local Attraction – Field Procedure Of Compass Traverse – Adjustment Of Clossing Error – Sources Of Error In Compass

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Unit – IVPlane Table Surveying

Definition – Object Of Plane Table Surveying – Uses Of Plane Table Surveying Principle - Accessories Of Plane Table – Orientation - Procedure Of Setting Up Plane

Table Over A Station - Advantages And Disadvantages Of Plane Tabling Surveying – Methods Of Plane Tabling - Special – Errors And Precautions - Procedure Of Plan Table Traversing – Methods - Radiation - Intersection -Resection - Traversing. Plane Table Surveying Resection – Three Point Problem And Two Point Problem

Unit – V Computation Of Area And Volume

Definition – Compution Of Area From Field Notes - The Mid - Ordinate Rule-Average – Ordinate Rule - Trapezoidal Rule - Simpson's Rule - Formulae For Calculation Of Sross - Sectional Are - Formulae For Calculation Of Volume -Prismodial Correction For Trapezoidal Of Average End Area Rule.

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004
2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005
4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002
5. Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012

12 Engineering Surveying

Unit – I Principles Of Engineering Surveying

Reconnaissance- Preliminary And Location Surveys For Engineering Projects - Lay Out – Setting Out Works - Route Surveys For Highways, Railways And Waterways - Curve Ranging – Horizontal And Vertical Curves - Simple Curves - Setting With Chain And Tapes, Tangential Angles By Theodolite, Double Theodolite - Compound And Reverse Curves - Transition Curves – Functions And Requirements - Setting Out By Offsets And Angles - Vertical Curves - Sight Distances – Mine Surveying - Instruments - Tunnels - Correlation Of Under Ground And Surface Surveys -

Unit – II Levelling

Introduction -Definition- -Uses Of Levelling- Types Of Level - Horizontal Line - Levels And Staves - Spirit Level - Levelling Staff Sensitiveness - Bench Marks - Temporary And Permanent Adjustments Height Of Collimation & Rise & Fall Method-Check Levelling - Booking - Reduction -Curvature And Refraction - Reciprocal Levelling - Longitudinal And Cross Sections - Plotting

Unit – III Theodolite Surveying

Introduction Definition- Uses Of Theodolite - Vernier And Microptic - Description And Uses - Temporary And Permanent Adjustments Of Vernier Transit –Methods Of Theodolite Horizontal Angles - Vertical Angles - Heights And Distances -Traversing - Closing Error And Distribution - Gale's Tables - Omitted Measurements

Unit – IV Tacheometric Surveying

Definition- -Uses Of Tacheometric Systems - Tangential, Stadia And Subtense Methods - Stadia Systems – Horizont Aland Inclined Sights - Vertical And Normal Staffing - Fixed And Movable Hairs - Stadia Constants - Anallactic Lens- Subtense Bar.

Unit – V Trignometrical Surveying

Introduction- Definition–Uses Of Trignometrical- -Base Of The Object Accessible- Base Of The Object Inaccessible Instruments Stations In The Same Vertical Plane As The Elevated Object-Base Of The Object Inaccessbile Instruments Stations Not In The Same Vertical Plane As The Elevated Object Above The Ground When Its Base And Top Are Visible But Not Accessible – Determination Of Elevation Of An Object From Angles Of Elevation From Three Instrument Stations In One Line

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004
2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005
4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002
5. Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012

13 Modern Surveying

Unit – I Introduction

Introduction Total Station- Uses Total Station - Principle Total Station–- Application Of Total Station- Componant Part Of A Total Station - Accessories Used - Summary Of Total Station Characteristics -Electronic Display And Data Reding - Instrument Preparation, Setting And Mesurement (Distance Angle , Bearing Etc.) -

Unit – II Total Station

Fieldy Procedure For Co- Ordinate Measurement - Field Procedure Of Run A TraverseSurvey - Linking Data Files-Electro – Magnetic Distance Measurement (Edm) – Properties Of Electromagnetic Waves-Definition- Object Of –Uses EdmOf - Modulation-Types Of Edm Instruments–Surveying- Stakeout- Reference Element - Tie Distance- Area Dtm Volume- Road 2d –-Remote Height-Reference Plan- **-** Construction Line

Unit – III Setting Out Of Total Station

Part Of The Total Station –Tripod Setup-Mount Instrument Tripod-Focus On Survey Point-Levelling The Instruments-Levelling-Electronically Verify Levelling-Adjust Image And Retical Focuse –Calibrating The Instruments-Setting The Back Sight-Set Back-3d Co-Ordinate-Calibrative By Backsight By Angle-Orientation Set-Resection

Unit – IV Remote Sensing& Gis

Indroduction -Definition- -Uses Of Remote Sensing - Principle Remote Sensing – Electro Magnetic Energy - Electro Maganetic Spectrum – Particle Theory – Effect Of Atmosphere On Electromagnetic Radiations – Energy Interaction With Earth Surface Features – Remote Sensing System – Data Acquisition And Interpretation – Resolution Concept In Romote Sensing – False Colour Composite (Fcc) Applications Of Remote Sensing – Land Use/ Land Cover Analysis – Methodology For Land User/ Land Cover Mapping – Remote Sensing In India – Indian Remote Sensing Satellites - Introduction -Definition- -Uses Of Gis- Principle Gis – Subsystems Of Gis , Hardware Of Gis – Data For Gis – Data Structure Of Gis – Representation Of Features – Capabilities Functionalities Of Gis – Integration Data – Map Overlay - Application Of Gis – Data Quality And Errors – Sourse Of Errors In Gis – Gis Based Software –

Unit – V Global Positions System(Gps)

Introduction Gps- Definition- Object Of Gps -Uses Of Gps- Principle Gps - Satelite Navigations Constellations-Gps System And Itscomponents-Glonass SystemReference System And Co-Ordinate Systems,Satellite Signals-Gps Observables-Data Formats,Surveying With Gps-Positioning MethodsData

Processing,Gps Data Integration-Applications,Futures Of Gps- Definition- Object Of - Uses Of Dgps -Principle Dgps- Indroduction Dgps -Futures Of Dgps-Application Dgps-Co-Ordinates

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004
2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005
4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002

5.Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012

14 Chain Surveying & Compass Surveying – Practical

Experiments & Study

1. Pacing – To Find Pace Value
2. Study Of Chain,Tape And Accessories Used For Chain Survey
3. Unfolding ,Spreading,Aliging,Reading And Folding A Chain
4. Use Of Cross Staff Takking Of Object Regarding
5. Chainng And Ranging Line
6. Determination Of Area Of Plot Using Chain
7. Chain Survey Traverse Around A Building And Plot Existing Building
8. Study Of Prismatic Compass Setting Up Over A Station And Observe Bearing Of Lines.
9. Running Closed Traverse And Finding The Included Angle –Minimum 5 Points
10. Determination Of Distance Between Two Points When Their Base Is Accessible.
11. Determination Of Distance Between Two Points When Their Base Is Inaccessible.

Requirements

1. Measuring Tape
2. Ranging Rods
3. Chain – 30 Meters
4. Arrows
5. Cross Staff
6. Optical Square
7. Presmatic Compass With Stand
8. Surveyors Compass With Stand
9. Other Required Equipments
10. Peg
11. Plumb Bob
12. Personal Protective Equipments

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004

2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005
4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002

5.Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012

15 Levelling & TheodoliteSurveying – Practical

Experiments & Study

1. Study Of A Level-Temporary Adjustments ,Taking Reading And Booking In A Field Book.
2. Simple Levelling – To Determine The Level Difference Between The Given Points.
3. Fly Levelling –Reduction By Height Of Collimation Method And Rise And Fall Method
4. Fly Levelling –With Inverted Reading
5. Check Levelling
6. Longitudinal And Cross Section Of The Road
7. Theodolite Surveying – Determination Of Horizontal Angle Repetition Method .
8. Theodolite Surveying – Determination Of Horizontal Angle – Reiteration Method
9. Clossed Theodolite Traversing Measuring Included Angle.
10. Measurement Vertical Angle.
12. Determination Of Constants Of Tacheometer

7. Requirements

1. Tape
2. Peg
3. Arrows
4. Dumpy Level With Stand
5. Auto Level With Stand
6. Levelling Staff
7. Plumb Bob
8. Theodolite
9. Tripod
10. Ranging Rods
11. Tacheometer

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004
2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005
4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002

5.Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012

16 Total Station & Gps - Practical

Experiments & Study

1. Study Of Total Station
2. Handling Of Total Station – Setting Out Of Building –To Stakeout The Given Plan Of The Building On The Ground Using Total Station.
3. Handling Of Total Station – Profile Survey – To Calculate The Capacity Of Water In The Lake Using Total Station (Data Collection, Transfer, Processing, Drafting & Mapping).
4. Handling Of Total Station – Plotting Of An Existing Building – To Plot The Existing Building Using Total Station.
5. Measurement Of Distance And Co-Ordinates Of Given Elevation Points
6. Traverse And Plotting Using Total Station
7. Determination Of Field And Enclosed Between 3 Or More Known Points By Using Total Station.
8. Reading Of Various Maps Like Taluk Map And District Map
9. Study Of Hand Help Gps
10. Measurement Of Lattitude ,Longitude And Altitude Using Hand Held Gps
11. Selection And Marking Of Routings Way Point Using Hand Held Gps

Requirements

1. Total Station
2. Tripod
3. Prism
4. Mini Prism
5. Plumb Bob
6. Tape
7. Peg
8. Arrows

References

1. Surveying Vol. 1 – 2nd Edition - Tata Mcgraw-Hill – S.K. Duggal - 2004
2. Surveying Vol. 2 – 3rd & 15th Edition - Tata Mcgraw-Hill – S.K. Duggal – 2009 & 2010
3. Surveying Vol. 3 – 5th Edition – Lakshmi Publications - B.C. Punmia, A.K. Jain – 2005

4. Surveying & Levelling – Part 2 – Pune Vidyarthi Griha Prakashan – Prof. Sv Kulkarni – 2002
5.Surveying And Levelling– 2nd Edition - Tata Mcgraw-Hill – N N Basak 2012