STUDY + DIET + WORKOUT + COMPRE MASTER BLUEPRINT

This expanded document includes:

1. Deep content breakdown for every subject (based on uploaded handouts)

2. What to study for comprehensives in exact order

3. Recommended free online resources for each topic

4. Daily workout plan (light but effective during exams)

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SECTION 1 — SUBJECT-WISE COMPRE STUDY BLUEPRINT

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MATH F211 (Mathematics III)

(Ref: MATH F211 Handout)

MAIN TOPICS:

1. First-order ODEs (Sections 1-11)

2. Second-order ODEs (Sections 14-23)

3. Systems of ODEs (Sections 54-56)

4. Series Solutions + Hypergeometric Eqns (Sections 24-31)

5. Special Functions:

- Legendre Polynomials (Sections 44-45)

- Chebyshev Polynomials (Appendix D)

- Bessel Functions (Sections 46-48)

6. Laplace Transforms (Sections 47-53)

7. Fourier Series (Sections 33-36)

8. Sturm–Liouville Problems (Sections 40 & 43)

9. PDEs: Heat, Wave, Laplace equations

STUDY ORDER FOR MAX SCORE:

1. Laplace Transforms → easiest marks

2. Fourier Series → formula-based

3. First & Second Order ODEs → high weightage

4. PDEs → direct solves

5. Series Solutions → moderate difficulty

6. Special Functions → medium

7. Sturm–Liouville → medium

8. Systems of ODEs → medium-hard

RESOURCES:

- 3Blue1Brown Differential Equations Playlist

- MIT OCW 18.03 (for Laplace, ODE)

- Paul's Online Notes (ODE, PDE, Fourier)

- YouTube: Michel van Biezen ODE series

MAC F211 (Linear Algebra)

(Ref: Course Package)

MAIN TOPICS:

1. Vector spaces, subspaces

2. Linear independence, basis

3. Inner product spaces

4. Orthogonality, Gram-Schmidt, QR

5. Eigenvalues, diagonalization

6. Spectral theorem

7. Least squares, orthogonal projections

8. SVD & PCA basics

STUDY ORDER:

1. Eigenvalues + diagonalization

2. Orthogonality + Gram-Schmidt

3. Least squares + projections

4. Spectral theorem

5. SVD + PCA

6. Vector spaces theory

RESOURCES:

- MIT OCW 18.06 Gilbert Strang

- Strang's book "Introduction to Linear Algebra"

- Khan Academy (Eigenvalues, projections)

- Essence of Linear Algebra (3Blue1Brown)

MAC F212 (OOPS – Java)

TOPICS:

- Classes, objects, methods

- Overloading vs overriding

- Inheritance, interfaces, abstract classes

- Exception handling

- File handling

- Collections (ArrayList, HashMap)

- Multithreading basics

STUDY ORDER:

1. Inheritance + polymorphism

2. Exceptions

3. Collections + common patterns

4. File I/O

5. Multithreading

RESOURCES:

- Oracle Java Tutorials
- FreeCodeCamp Java Course
- W3Schools Java Reference

MAC F213 (Discrete Mathematics)

TOPICS:

- Propositional + predicate logic
- Proof methods
- Sets & functions
- Combinatorics (P&C;, binomial theorem)
- Graph theory: BFS/DFS, trees, connectivity
- Relations & equivalence classes

STUDY ORDER:

1. Logic
2. Proofs
3. Combinatorics
4. Graph theory
5. Relations

RESOURCES:

- MIT OCW Discrete Math
- Rosen’s Discrete Mathematics (free PDF online legit previews)
- Gate Smashers Discrete Math YT

MAC F214 (Real Analysis)

TOPICS:

- Metric spaces
- Limits & continuity
- Compactness & connectedness
- Sequences of functions
- Uniform convergence
- Riemann Integration

STUDY ORDER:

1. Metric spaces
2. Limits & continuity
3. Compactness & connectedness
4. Uniform convergence
5. Integration

RESOURCES:

- Prof. Francis Su Real Analysis Lectures (Harvey Mudd)
- Understanding Analysis (Abbott) explanation videos
- Bachmann Analysis Lecture Series

ECON F211 (Economics)

(Ref: Handout ECON F211)

TOPICS:

- Demand, Supply, Elasticity
- Cost functions
- Competitive markets
- Monopoly & Oligopoly

- Asymmetric information

- Public goods

- Macro: GDP, inflation, fiscal & monetary policy

STUDY ORDER:

1. Demand/Supply

2. Elasticity

3. Cost functions

4. Market structures

5. Asymmetric info

6. Macro

RESOURCES:

- Mankiw Macroeconomics (free summaries online)

- Jacob Clifford playlist (micro + macro)

- Khan Academy Economics

ECON F212 (Finance & Accounting)

(Ref: ECON F212 Handout)

TOPICS:

1. Journal entries

2. Ledger posting

3. Trial balance

4. P&L;, Balance Sheet

5. Cash Flow Statements

6. Ratio Analysis

7. Financial System

8. Markets (money, bond, forex, derivatives)

9. Interest rates & security valuation

STUDY ORDER:

1. Journal → Ledger → TB (base)

2. Final accounts

3. Cash flows

4. Ratios

5. Indian Financial System

6. Markets

7. Security valuation

RESOURCES:

- AccountingStuff YouTube channel

- Investopedia (ratios, valuation)

- Khan Academy “Finance & Capital Markets”

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SECTION 2 — WORKOUT PLAN DURING EXAMS

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Purpose: maintain metabolism + reduce stress + keep brain oxygenated.

DAILY PLAN:

MONDAY:

- 20 min brisk walk

- 10 min stretching

TUESDAY:

- Dumbbell routine (light)

* Goblet squats 3x12

* Shoulder press 3x12

* Rows 3x12

WEDNESDAY:

- 30 min walk

THURSDAY:

- Core work:

* Plank 30 sec x 3

* Dead bugs 3x12

* Glute bridge 3x15

FRIDAY:

- Walk 20 min + stretch

SATURDAY:

- Light full body:

* Pushups 3x10

* Rows 3x10

* Lunges 3x10 per leg

SUNDAY:

- Rest or 15 min yoga/stretching

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SECTION 3 — DAILY DIET RECAP (MESS-BASED)

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- Chapati over rice

- Dal unlimited

- Salad unlimited

- Avoid fried snacks

- Whey 1–2 scoops/day

- 2–3 eggs/day

- 1800–2000 kcal target

- 120–150g protein

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