



राजीव गाँधी राष्ट्रीय विमानन विश्वविद्यालय  
RAJIV GANDHI NATIONAL AVIATION UNIVERSITY  
नागर विमानन मंत्रालय, भारत सरकार के तहत एक केंद्रीय विश्वविद्यालय  
(A Central University under Ministry of Civil Aviation, Govt. of India)  
2013 में संसद के एक अधिनियम द्वारा स्थापित  
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**Course Structure: B. Tech. (Electronics and Communications Engineering - Avionics)**

| Sr. No.           | Subject                         | L | T | P | Credit    |
|-------------------|---------------------------------|---|---|---|-----------|
| <b>Semester-1</b> |                                 |   |   |   |           |
| 1                 | Applied Mathematics -1          | 3 | 1 | 0 | 4         |
| 2                 | Applied Physics                 | 3 | 1 | 0 | 4         |
| 3                 | Professional Communication      | 2 | 0 | 0 | 2         |
| 4                 | Basic Electrical Technology     | 3 | 1 | 0 | 4         |
| 5                 | Computer Programming            | 2 | 0 | 1 | 3         |
| 6                 | Introduction to Aerospace Eng.  | 3 | 0 | 0 | 3         |
| 7                 | Field visit                     | 0 | 0 | 2 | 2         |
| <b>TOTAL</b>      |                                 |   |   |   | <b>22</b> |
| <b>Semester-2</b> |                                 |   |   |   |           |
| 1                 | Applied Mathematics-II          | 3 | 1 | 0 | 4         |
| 2                 | Applied Mechanics               | 3 | 0 | 1 | 4         |
| 3                 | Analog Electronics              | 3 | 0 | 0 | 3         |
| 4                 | Innovation and Entrepreneurship | 3 | 0 | 0 | 3         |
| 5                 | Introduction to Avionics        | 3 | 0 | 0 | 3         |
| 6                 | Engineering Graphics            | 3 | 0 | 1 | 4         |
| 7                 | Lab-1: Basic Electronics Lab    | 0 | 0 | 1 | 1         |
| <b>TOTAL</b>      |                                 |   |   |   | <b>22</b> |



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|   | <b>Semester-3</b>                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>Credit</b> |
|---|--|----------|----------|----------|---------------|
| 1 | Applied Mathematics-III                | 3        | 1        | 0        | 4             |
| 2 | Signals and Systems                    | 3        | 1        | 0        | 4             |
| 3 | Instrumentations and Measurement       | 3        | 0        | 1        | 4             |
| 4 | Communication Systems                  | 3        | 1        | 0        | 4             |
| 5 | Introduction to Control Systems        | 3        | 1        | 0        | 4             |
| 6 | Lab. -I: Communication Lab.            | 0        | 0        | 1        | 1             |
| 7 | Lab. -II: Control Lab                  | 0        | 0        | 1        | 1             |
|   | <b>TOTAL</b>                           |          |          |          | <b>22</b>     |
|   | <b>Semester-4</b>                      | <b>L</b> | <b>T</b> | <b>P</b> | <b>Credit</b> |
| 1 | Navigation Systems                     | 3        | 0        | 0        | 3             |
| 2 | E.M. Theory and Radiating Waves        | 3        | 0        | 0        | 3             |
| 3 | Computer Organization and Architecture | 3        | 0        | 0        | 3             |
| 4 | Flight and System Simulation           | 2        | 0        | 1        | 3             |
| 5 | Engineering Management and Ethics      | 3        | 0        | 0        | 3             |
| 6 | Digital Electronics                    | 3        | 0        | 0        | 3             |
| 7 | Navigation Lab                         | 0        | 0        | 1        | 1             |
| 8 | Digital Electronics Lab                | 0        | 0        | 1        | 1             |
| 9 | Summer Internship/Industrial Training  | 0        | 0        | 2        | 2             |



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|   | <b>TOTAL</b>                               |   |   |   | 22            |
|---|--|---|---|---|---------------|
|   | <b>Semester-5</b>                          | L | T | P | <b>Credit</b> |
| 1 | Space Technology                           | 3 | 0 | 0 | 3             |
| 2 | Material Science                           | 3 | 0 | 0 | 3             |
| 3 | Surveillance Systems                       | 3 | 0 | 0 | 3             |
| 4 | Power Electronics                          | 3 | 0 | 1 | 4             |
| 5 | Digital Signal Processing                  | 3 | 0 | 0 | 3             |
| 6 | Microprocessor and Micro Controller        | 3 | 0 | 0 | 3             |
| 7 | Lab.-I Surveillance Lab.                   | 0 | 0 | 1 | 1             |
| 8 | Lab-II Microprocessor and Micro Controller | 0 | 0 | 1 | 1             |
|   | <b>TOTAL</b>                               |   |   |   | <b>21</b>     |
|   | <b>Semester-6</b>                          | L | T | P |               |
| 1 | Landing-Aid Systems                        | 3 | 0 | 0 | 3             |
| 2 | Display Technology                         | 3 | 0 | 0 | 3             |
| 3 | Computer Networks and Protocols            | 3 | 0 | 1 | 4             |
| 4 | Digital Image Processing                   | 3 | 0 | 0 | 3             |
| 5 | Elective -1                                | 3 | 0 | 0 | 3             |
| 6 | Elective -2                                | 3 | 0 | 0 | 3             |
| 7 | Signal and Image Processing Lab-1          | 0 | 0 | 1 | 1             |
| 8 | Landing-aid systems Lab-2                  | 0 | 0 | 1 | 1             |
|   | <b>TOTAL</b>                               |   |   |   | <b>21</b>     |



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|   | <b>Semester-7</b>                              | L | T | P | Credit |
|---|--|---|---|---|--------|
| 1 | Flight Test Instrumentation and Flight Testing | 3 | 0 | 1 | 4      |
| 2 | Safety Management Systems                      | 3 | 0 | 0 | 3      |
| 3 | Elective -3                                    | 3 | 0 | 0 | 3      |
| 4 | Elective -4                                    | 3 | 0 | 0 | 3      |
| 5 | Certification Projects in the Industry         | 0 | 0 | 3 | 3      |

| 6 | Mini Project                                     | 0 | 0 | 4  | 4         |
|---|--|---|---|----|-----------|
| 7 | Field Visit – Flight Instrumentation and Testing | 0 | 0 | 1  | 1         |
|   | <b>TOTAL</b>                                     |   |   |    | <b>21</b> |
|   | <b>Semester-8</b>                                | L | T | P  | Credit    |
| 1 | Major Project/ Internship                        | 0 | 0 | 12 | 12        |
| 2 | MOOC/ On-Line/ NPTEL/SWAYAM Courses              | 3 | 0 | 0  | 3         |
|   | <b>TOTAL</b>                                     |   |   |    | <b>15</b> |

**Summary of Credits**

| Semester | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | Total |
|----------|----|----|----|----|----|----|----|----|-------|
| Credit   | 22 | 22 | 22 | 22 | 21 | 21 | 21 | 15 | 166   |

**Electives: Humanities, Economics & General Management Electives:**

| Sr.No. | Subject           | Sub. Type | L | T | P | Credit |
|--------|-------------------|-----------|---|---|---|--------|
|        | <b>Semester-5</b> |           |   |   |   |        |



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|   |  |          |   |   |   |   |
|---|--|----------|---|---|---|---|
| 1 | VALUES AND ETHICS                            | ELECTIVE | 3 | 0 | 0 | 3 |
| 2 | ENVIRONMENTAL SCIENCE                        | ELECTIVE | 3 | 0 | 0 | 3 |
| 3 | HISTORY OF THE MODERN WORLD                  | ELECTIVE | 3 | 0 | 0 | 3 |
| 4 | INTRODUCTION TO MACRO- AND MICRO-ECONOMICS.  | ELECTIVE | 3 | 0 | 0 | 3 |
| 5 | INTRODUCTION TO THE PRINCIPLES OF MANAGEMENT | ELECTIVE | 3 | 0 | 0 | 3 |
| 6 | SCIENCE OF LIVING SYSTEM                     | ELECTIVE | 3 | 0 | 0 | 3 |
| 7 | INTRODUCTION TO BIOLOGY                      | ELECTIVE | 3 | 0 | 0 | 3 |
| 8 | TECHNOLOGY AND MORDEN CIVILIZATION           | ELECTIVE | 3 | 0 | 0 | 3 |
| 9 | INTRODUCTION TO PSYCHOLOGY                   | ELECTIVE | 3 | 0 | 0 | 3 |

### Avionics Electives:

| Sr.No.                  | Subject   | Sub. Type | L | T | P | Credit |
|-------------------------|---|-----------|---|---|---|--------|
| <b>Semester-6 and 7</b> |   |           |   |   |   |        |
| 1                       | EMI/EMC/EMP techniques  | ELECTIVE  |   |   |   |        |
| 2                       | Reliability Engineering   | ELECTIVE  |   |   |   |        |
| 3                       | Software Engineering  | ELECTIVE  |   |   |   |        |
| 4                       | AI/ML   | ELECTIVE  |   |   |   |        |
| 5                       | ADS(B)  | ELECTIVE  |   |   |   |        |
| 6                       | Data Structures and Algorithm   | ELECTIVE  |   |   |   |        |
| 7                       | UAV system  | ELECTIVE  |   |   |   |        |
| 8                       | Composite Material related to Avionics                                    | ELECTIVE  |   |   |   |        |
| 9                       | Optical Communication   | ELECTIVE  |   |   |   |        |
| 10                      | Wireless Communication  | ELECTIVE  |   |   |   |        |
| 11                      | Cyber Security  | ELECTIVE  |   |   |   |        |
| <b>Sr. No.</b>          | <b>ELECTIVES FOR CERTIFICATION</b>  |           |   |   |   |        |
| 1                       | Security Equipment (X-BIS / HHMD / DFMD) & ETD (Explosive Trace Detector) | ELECTIVE  |   |   |   |        |
| 2                       | Terrestrial Navigation System in Aviation                                 | ELECTIVE  |   |   |   |        |
| 3                       | Surveillance System in aviation (ADS-B ,                                  | ELECTIVE  |   |   |   |        |



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|---|---|----------|--|--|--|--|
|   | ASMGCS, PSR,SSR)                        |          |  |  |  |  |
| 4 | ADP in aviation                         | ELECTIVE |  |  |  |  |
| 5 | AMSS Hardware and Application operation | ELECTIVE |  |  |  |  |
| 6 | GNSS/GAGAN/NaViC systems                | ELECTIVE |  |  |  |  |
| 7 | VHF/VCS/DVR/D-ATIS                      | ELECTIVE |  |  |  |  |