Assignment nr. 1

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.8 dB** and a noise factor of **1.47 dB** at the design frequency **4.70 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

1. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
2. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
3. Results (G,NF as printscreen)
4. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
5. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

1. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
2. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
3. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
4. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
5. -1p, using the NE 71084 transistor

Bonus

1. +1p, using two different transistors for the two stages of the amplifier
2. +1p, using a different PBF filter schematic than in the example (coupled lines)
3. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
4. +1(2)p, design (complete design) of transistor bias schematics
5. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 2

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.2 dB** and a noise factor of **1.21 dB** at the design frequency **3.95 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

6. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
7. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
8. Results (G,NF as printscreen)
9. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
10. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

6. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
7. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
8. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
9. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
10. -1p, using the NE 71084 transistor

Bonus

6. +1p, using two different transistors for the two stages of the amplifier
7. +1p, using a different PBF filter schematic than in the example (coupled lines)
8. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
9. +1(2)p, design (complete design) of transistor bias schematics
10. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 3

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.7 dB** and a noise factor of **1.39 dB** at the design frequency **5.00 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

11. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
12. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
13. Results (G,NF as printscreen)
14. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
15. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

11. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
12. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
13. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
14. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
15. -1p, using the NE 71084 transistor

Bonus

11. +1p, using two different transistors for the two stages of the amplifier
12. +1p, using a different PBF filter schematic than in the example (coupled lines)
13. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
14. +1(2)p, design (complete design) of transistor bias schematics
15. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 4

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.1 dB** and a noise factor of **1.29 dB** at the design frequency **3.15 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

16. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
17. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
18. Results (G,NF as printscreen)
19. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
20. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

16. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
17. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
18. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
19. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
20. -1p, using the NE 71084 transistor

Bonus

16. +1p, using two different transistors for the two stages of the amplifier
17. +1p, using a different PBF filter schematic than in the example (coupled lines)
18. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
19. +1(2)p, design (complete design) of transistor bias schematics
20. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 5

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.8 dB** and a noise factor of **1.36 dB** at the design frequency **3.40 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

21. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
22. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
23. Results (G,NF as printscreen)
24. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
25. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

21. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
22. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
23. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
24. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
25. -1p, using the NE 71084 transistor

Bonus

21. +1p, using two different transistors for the two stages of the amplifier
22. +1p, using a different PBF filter schematic than in the example (coupled lines)
23. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
24. +1(2)p, design (complete design) of transistor bias schematics
25. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 6

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.5 dB** and a noise factor of **1.24 dB** at the design frequency **3.95 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

26. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
27. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
28. Results (G,NF as printscreen)
29. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
30. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

26. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
27. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
28. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
29. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
30. -1p, using the NE 71084 transistor

Bonus

26. +1p, using two different transistors for the two stages of the amplifier
27. +1p, using a different PBF filter schematic than in the example (coupled lines)
28. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
29. +1(2)p, design (complete design) of transistor bias schematics
30. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 7

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.3 dB** and a noise factor of **1.35 dB** at the design frequency **2.90 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

31. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
32. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
33. Results (G,NF as printscreen)
34. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
35. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

31. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
32. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
33. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
34. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
35. -1p, using the NE 71084 transistor

Bonus

31. +1p, using two different transistors for the two stages of the amplifier
32. +1p, using a different PBF filter schematic than in the example (coupled lines)
33. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
34. +1(2)p, design (complete design) of transistor bias schematics
35. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 8

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.9 dB** and a noise factor of **1.25 dB** at the design frequency **2.20 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

36. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
37. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
38. Results (G,NF as printscreen)
39. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
40. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

36. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
37. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
38. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
39. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
40. -1p, using the NE 71084 transistor

Bonus

36. +1p, using two different transistors for the two stages of the amplifier
37. +1p, using a different PBF filter schematic than in the example (coupled lines)
38. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
39. +1(2)p, design (complete design) of transistor bias schematics
40. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 9

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.9 dB** and a noise factor of **1.26 dB** at the design frequency **2.30 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

41. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
42. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
43. Results (G,NF as printscreen)
44. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
45. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

41. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
42. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
43. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
44. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
45. -1p, using the NE 71084 transistor

Bonus

41. +1p, using two different transistors for the two stages of the amplifier
42. +1p, using a different PBF filter schematic than in the example (coupled lines)
43. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
44. +1(2)p, design (complete design) of transistor bias schematics
45. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 10

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.3 dB** and a noise factor of **1.17 dB** at the design frequency **3.55 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

46. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
47. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
48. Results (G,NF as printscreen)
49. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
50. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

46. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
47. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
48. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
49. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
50. -1p, using the NE 71084 transistor

Bonus

46. +1p, using two different transistors for the two stages of the amplifier
47. +1p, using a different PBF filter schematic than in the example (coupled lines)
48. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
49. +1(2)p, design (complete design) of transistor bias schematics
50. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 11

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.3 dB** and a noise factor of **1.16 dB** at the design frequency **1.95 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

51. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
52. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
53. Results (G,NF as printscreen)
54. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
55. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

51. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
52. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
53. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
54. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
55. -1p, using the NE 71084 transistor

Bonus

51. +1p, using two different transistors for the two stages of the amplifier
52. +1p, using a different PBF filter schematic than in the example (coupled lines)
53. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
54. +1(2)p, design (complete design) of transistor bias schematics
55. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 12

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.8 dB** and a noise factor of **1.29 dB** at the design frequency **4.75 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

56. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
57. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
58. Results (G,NF as printscreen)
59. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
60. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

56. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
57. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
58. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
59. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
60. -1p, using the NE 71084 transistor

Bonus

56. +1p, using two different transistors for the two stages of the amplifier
57. +1p, using a different PBF filter schematic than in the example (coupled lines)
58. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
59. +1(2)p, design (complete design) of transistor bias schematics
60. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 13

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.0 dB** and a noise factor of **1.18 dB** at the design frequency **1.80 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

61. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
62. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
63. Results (G,NF as printscreen)
64. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
65. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

61. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
62. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
63. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
64. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
65. -1p, using the NE 71084 transistor

Bonus

61. +1p, using two different transistors for the two stages of the amplifier
62. +1p, using a different PBF filter schematic than in the example (coupled lines)
63. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
64. +1(2)p, design (complete design) of transistor bias schematics
65. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 14

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.4 dB** and a noise factor of **1.19 dB** at the design frequency **2.35 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

66. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
67. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
68. Results (G,NF as printscreen)
69. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
70. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

66. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
67. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
68. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
69. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
70. -1p, using the NE 71084 transistor

Bonus

66. +1p, using two different transistors for the two stages of the amplifier
67. +1p, using a different PBF filter schematic than in the example (coupled lines)
68. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
69. +1(2)p, design (complete design) of transistor bias schematics
70. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 15

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.0 dB** and a noise factor of **1.31 dB** at the design frequency **4.70 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

71. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
72. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
73. Results (G,NF as printscreen)
74. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
75. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

71. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
72. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
73. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
74. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
75. -1p, using the NE 71084 transistor

Bonus

71. +1p, using two different transistors for the two stages of the amplifier
72. +1p, using a different PBF filter schematic than in the example (coupled lines)
73. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
74. +1(2)p, design (complete design) of transistor bias schematics
75. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 16

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.4 dB** and a noise factor of **1.35 dB** at the design frequency **2.00 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

76. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
77. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
78. Results (G,NF as printscreen)
79. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
80. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

76. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
77. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
78. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
79. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
80. -1p, using the NE 71084 transistor

Bonus

76. +1p, using two different transistors for the two stages of the amplifier
77. +1p, using a different PBF filter schematic than in the example (coupled lines)
78. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
79. +1(2)p, design (complete design) of transistor bias schematics
80. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 17

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.1 dB** and a noise factor of **1.35 dB** at the design frequency **2.15 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

81. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
82. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
83. Results (G,NF as printscreen)
84. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
85. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

81. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
82. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
83. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
84. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
85. -1p, using the NE 71084 transistor

Bonus

81. +1p, using two different transistors for the two stages of the amplifier
82. +1p, using a different PBF filter schematic than in the example (coupled lines)
83. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
84. +1(2)p, design (complete design) of transistor bias schematics
85. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 18

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.2 dB** and a noise factor of **1.12 dB** at the design frequency **3.15 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

86. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
87. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
88. Results (G,NF as printscreen)
89. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
90. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

86. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
87. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
88. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
89. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
90. -1p, using the NE 71084 transistor

Bonus

86. +1p, using two different transistors for the two stages of the amplifier
87. +1p, using a different PBF filter schematic than in the example (coupled lines)
88. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
89. +1(2)p, design (complete design) of transistor bias schematics
90. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 19

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.6 dB** and a noise factor of **1.37 dB** at the design frequency **2.45 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

91. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
92. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
93. Results (G,NF as printscreen)
94. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
95. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

91. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
92. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
93. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
94. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
95. -1p, using the NE 71084 transistor

Bonus

91. +1p, using two different transistors for the two stages of the amplifier
92. +1p, using a different PBF filter schematic than in the example (coupled lines)
93. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
94. +1(2)p, design (complete design) of transistor bias schematics
95. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 20

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.8 dB** and a noise factor of **1.10 dB** at the design frequency **1.95 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

96. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
97. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
98. Results (G,NF as printscreen)
99. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
100. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

96. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
97. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
98. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
99. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
100. -1p, using the NE 71084 transistor

Bonus

96. +1p, using two different transistors for the two stages of the amplifier
97. +1p, using a different PBF filter schematic than in the example (coupled lines)
98. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
99. +1(2)p, design (complete design) of transistor bias schematics
100. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 21

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.5 dB** and a noise factor of **1.34 dB** at the design frequency **1.80 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

101. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
102. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
103. Results (G,NF as printscreen)
104. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
105. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

101. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
102. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
103. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
104. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
105. -1p, using the NE 71084 transistor

Bonus

101. +1p, using two different transistors for the two stages of the amplifier
102. +1p, using a different PBF filter schematic than in the example (coupled lines)
103. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
104. +1(2)p, design (complete design) of transistor bias schematics
105. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 22

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.3 dB** and a noise factor of **1.24 dB** at the design frequency **1.75 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

106. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
107. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
108. Results (G,NF as printscreen)
109. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
110. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

106. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
107. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
108. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
109. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
110. -1p, using the NE 71084 transistor

Bonus

106. +1p, using two different transistors for the two stages of the amplifier
107. +1p, using a different PBF filter schematic than in the example (coupled lines)
108. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
109. +1(2)p, design (complete design) of transistor bias schematics
110. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 23

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.4 dB** and a noise factor of **1.30 dB** at the design frequency **4.25 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

111. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
112. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
113. Results (G,NF as printscreen)
114. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
115. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

111. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
112. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
113. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
114. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
115. -1p, using the NE 71084 transistor

Bonus

111. +1p, using two different transistors for the two stages of the amplifier
112. +1p, using a different PBF filter schematic than in the example (coupled lines)
113. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
114. +1(2)p, design (complete design) of transistor bias schematics
115. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 24

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.4 dB** and a noise factor of **1.29 dB** at the design frequency **2.80 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

116. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
117. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
118. Results (G,NF as printscreen)
119. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
120. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

116. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
117. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
118. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
119. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
120. -1p, using the NE 71084 transistor

Bonus

116. +1p, using two different transistors for the two stages of the amplifier
117. +1p, using a different PBF filter schematic than in the example (coupled lines)
118. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
119. +1(2)p, design (complete design) of transistor bias schematics
120. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 25

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **24.1 dB** and a noise factor of **1.31 dB** at the design frequency **1.85 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

121. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
122. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
123. Results (G,NF as printscreen)
124. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
125. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

121. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
122. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
123. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
124. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
125. -1p, using the NE 71084 transistor

Bonus

121. +1p, using two different transistors for the two stages of the amplifier
122. +1p, using a different PBF filter schematic than in the example (coupled lines)
123. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
124. +1(2)p, design (complete design) of transistor bias schematics
125. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 26

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.0 dB** and a noise factor of **1.17 dB** at the design frequency **1.45 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

126. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
127. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
128. Results (G,NF as printscreen)
129. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
130. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

126. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
127. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
128. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
129. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
130. -1p, using the NE 71084 transistor

Bonus

126. +1p, using two different transistors for the two stages of the amplifier
127. +1p, using a different PBF filter schematic than in the example (coupled lines)
128. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
129. +1(2)p, design (complete design) of transistor bias schematics
130. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 27

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.9 dB** and a noise factor of **1.34 dB** at the design frequency **3.75 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

131. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
132. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
133. Results (G,NF as printscreen)
134. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
135. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

131. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
132. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
133. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
134. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
135. -1p, using the NE 71084 transistor

Bonus

131. +1p, using two different transistors for the two stages of the amplifier
132. +1p, using a different PBF filter schematic than in the example (coupled lines)
133. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
134. +1(2)p, design (complete design) of transistor bias schematics
135. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 28

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.3 dB** and a noise factor of **1.25 dB** at the design frequency **2.60 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

136. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
137. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
138. Results (G,NF as printscreen)
139. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
140. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

136. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
137. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
138. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
139. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
140. -1p, using the NE 71084 transistor

Bonus

136. +1p, using two different transistors for the two stages of the amplifier
137. +1p, using a different PBF filter schematic than in the example (coupled lines)
138. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
139. +1(2)p, design (complete design) of transistor bias schematics
140. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 29

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.2 dB** and a noise factor of **1.49 dB** at the design frequency **4.80 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

141. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
142. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
143. Results (G,NF as printscreen)
144. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
145. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

141. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
142. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
143. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
144. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
145. -1p, using the NE 71084 transistor

Bonus

141. +1p, using two different transistors for the two stages of the amplifier
142. +1p, using a different PBF filter schematic than in the example (coupled lines)
143. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
144. +1(2)p, design (complete design) of transistor bias schematics
145. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 30

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.9 dB** and a noise factor of **1.08 dB** at the design frequency **1.30 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

146. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
147. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
148. Results (G,NF as printscreen)
149. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
150. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

146. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
147. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
148. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
149. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
150. -1p, using the NE 71084 transistor

Bonus

146. +1p, using two different transistors for the two stages of the amplifier
147. +1p, using a different PBF filter schematic than in the example (coupled lines)
148. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
149. +1(2)p, design (complete design) of transistor bias schematics
150. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 31

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.5 dB** and a noise factor of **1.31 dB** at the design frequency **4.00 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

151. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
152. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
153. Results (G,NF as printscreen)
154. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
155. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

151. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
152. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
153. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
154. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
155. -1p, using the NE 71084 transistor

Bonus

151. +1p, using two different transistors for the two stages of the amplifier
152. +1p, using a different PBF filter schematic than in the example (coupled lines)
153. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
154. +1(2)p, design (complete design) of transistor bias schematics
155. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 32

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.9 dB** and a noise factor of **1.31 dB** at the design frequency **1.70 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

156. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
157. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
158. Results (G,NF as printscreen)
159. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
160. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

156. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
157. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
158. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
159. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
160. -1p, using the NE 71084 transistor

Bonus

156. +1p, using two different transistors for the two stages of the amplifier
157. +1p, using a different PBF filter schematic than in the example (coupled lines)
158. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
159. +1(2)p, design (complete design) of transistor bias schematics
160. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 33

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **23.3 dB** and a noise factor of **1.19 dB** at the design frequency **1.95 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

161. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
162. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
163. Results (G,NF as printscreen)
164. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
165. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

161. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
162. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
163. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
164. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
165. -1p, using the NE 71084 transistor

Bonus

161. +1p, using two different transistors for the two stages of the amplifier
162. +1p, using a different PBF filter schematic than in the example (coupled lines)
163. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
164. +1(2)p, design (complete design) of transistor bias schematics
165. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 34

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.1 dB** and a noise factor of **1.20 dB** at the design frequency **2.80 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

166. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
167. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
168. Results (G,NF as printscreen)
169. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
170. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

166. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
167. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
168. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
169. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
170. -1p, using the NE 71084 transistor

Bonus

166. +1p, using two different transistors for the two stages of the amplifier
167. +1p, using a different PBF filter schematic than in the example (coupled lines)
168. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
169. +1(2)p, design (complete design) of transistor bias schematics
170. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 35

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.5 dB** and a noise factor of **1.21 dB** at the design frequency **2.05 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

171. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
172. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
173. Results (G,NF as printscreen)
174. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
175. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

171. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
172. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
173. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
174. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
175. -1p, using the NE 71084 transistor

Bonus

171. +1p, using two different transistors for the two stages of the amplifier
172. +1p, using a different PBF filter schematic than in the example (coupled lines)
173. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
174. +1(2)p, design (complete design) of transistor bias schematics
175. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 36

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **18.1 dB** and a noise factor of **1.26 dB** at the design frequency **4.45 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

176. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
177. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
178. Results (G,NF as printscreen)
179. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
180. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

176. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
177. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
178. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
179. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
180. -1p, using the NE 71084 transistor

Bonus

176. +1p, using two different transistors for the two stages of the amplifier
177. +1p, using a different PBF filter schematic than in the example (coupled lines)
178. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
179. +1(2)p, design (complete design) of transistor bias schematics
180. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 37

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.4 dB** and a noise factor of **1.39 dB** at the design frequency **2.75 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

181. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
182. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
183. Results (G,NF as printscreen)
184. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
185. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

181. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
182. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
183. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
184. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
185. -1p, using the NE 71084 transistor

Bonus

181. +1p, using two different transistors for the two stages of the amplifier
182. +1p, using a different PBF filter schematic than in the example (coupled lines)
183. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
184. +1(2)p, design (complete design) of transistor bias schematics
185. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 38

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.1 dB** and a noise factor of **1.23 dB** at the design frequency **3.65 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

186. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
187. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
188. Results (G,NF as printscreen)
189. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
190. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

186. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
187. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
188. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
189. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
190. -1p, using the NE 71084 transistor

Bonus

186. +1p, using two different transistors for the two stages of the amplifier
187. +1p, using a different PBF filter schematic than in the example (coupled lines)
188. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
189. +1(2)p, design (complete design) of transistor bias schematics
190. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 39

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.2 dB** and a noise factor of **1.34 dB** at the design frequency **4.50 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

191. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
192. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
193. Results (G,NF as printscreen)
194. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
195. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

191. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
192. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
193. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
194. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
195. -1p, using the NE 71084 transistor

Bonus

191. +1p, using two different transistors for the two stages of the amplifier
192. +1p, using a different PBF filter schematic than in the example (coupled lines)
193. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
194. +1(2)p, design (complete design) of transistor bias schematics
195. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 40

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.3 dB** and a noise factor of **1.39 dB** at the design frequency **3.95 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

196. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
197. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
198. Results (G,NF as printscreen)
199. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
200. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

196. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
197. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
198. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
199. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
200. -1p, using the NE 71084 transistor

Bonus

196. +1p, using two different transistors for the two stages of the amplifier
197. +1p, using a different PBF filter schematic than in the example (coupled lines)
198. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
199. +1(2)p, design (complete design) of transistor bias schematics
200. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 41

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.4 dB** and a noise factor of **1.23 dB** at the design frequency **3.40 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

201. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
202. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
203. Results (G,NF as printscreen)
204. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
205. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

201. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
202. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
203. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
204. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
205. -1p, using the NE 71084 transistor

Bonus

201. +1p, using two different transistors for the two stages of the amplifier
202. +1p, using a different PBF filter schematic than in the example (coupled lines)
203. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
204. +1(2)p, design (complete design) of transistor bias schematics
205. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 42

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.1 dB** and a noise factor of **1.21 dB** at the design frequency **4.05 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

206. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
207. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
208. Results (G,NF as printscreen)
209. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
210. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

206. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
207. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
208. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
209. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
210. -1p, using the NE 71084 transistor

Bonus

206. +1p, using two different transistors for the two stages of the amplifier
207. +1p, using a different PBF filter schematic than in the example (coupled lines)
208. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
209. +1(2)p, design (complete design) of transistor bias schematics
210. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 43

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **19.5 dB** and a noise factor of **1.30 dB** at the design frequency **4.10 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

211. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
212. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
213. Results (G,NF as printscreen)
214. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
215. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

211. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
212. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
213. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
214. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
215. -1p, using the NE 71084 transistor

Bonus

211. +1p, using two different transistors for the two stages of the amplifier
212. +1p, using a different PBF filter schematic than in the example (coupled lines)
213. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
214. +1(2)p, design (complete design) of transistor bias schematics
215. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 44

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.2 dB** and a noise factor of **1.29 dB** at the design frequency **4.25 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

216. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
217. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
218. Results (G,NF as printscreen)
219. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
220. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

216. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
217. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
218. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
219. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
220. -1p, using the NE 71084 transistor

Bonus

216. +1p, using two different transistors for the two stages of the amplifier
217. +1p, using a different PBF filter schematic than in the example (coupled lines)
218. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
219. +1(2)p, design (complete design) of transistor bias schematics
220. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 45

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.3 dB** and a noise factor of **1.25 dB** at the design frequency **4.25 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **8%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

221. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
222. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
223. Results (G,NF as printscreen)
224. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
225. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

221. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
222. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
223. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
224. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
225. -1p, using the NE 71084 transistor

Bonus

221. +1p, using two different transistors for the two stages of the amplifier
222. +1p, using a different PBF filter schematic than in the example (coupled lines)
223. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
224. +1(2)p, design (complete design) of transistor bias schematics
225. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 46

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.5 dB** and a noise factor of **1.33 dB** at the design frequency **3.05 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **7%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

226. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
227. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
228. Results (G,NF as printscreen)
229. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
230. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

226. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
227. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
228. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
229. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
230. -1p, using the NE 71084 transistor

Bonus

226. +1p, using two different transistors for the two stages of the amplifier
227. +1p, using a different PBF filter schematic than in the example (coupled lines)
228. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
229. +1(2)p, design (complete design) of transistor bias schematics
230. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 47

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.9 dB** and a noise factor of **1.31 dB** at the design frequency **2.00 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **5%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

231. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
232. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
233. Results (G,NF as printscreen)
234. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
235. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

231. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
232. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
233. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
234. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
235. -1p, using the NE 71084 transistor

Bonus

231. +1p, using two different transistors for the two stages of the amplifier
232. +1p, using a different PBF filter schematic than in the example (coupled lines)
233. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
234. +1(2)p, design (complete design) of transistor bias schematics
235. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 48

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **20.3 dB** and a noise factor of **1.41 dB** at the design frequency **3.65 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **6%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

236. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
237. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
238. Results (G,NF as printscreen)
239. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
240. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

236. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
237. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
238. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
239. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
240. -1p, using the NE 71084 transistor

Bonus

236. +1p, using two different transistors for the two stages of the amplifier
237. +1p, using a different PBF filter schematic than in the example (coupled lines)
238. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
239. +1(2)p, design (complete design) of transistor bias schematics
240. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 49

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **21.7 dB** and a noise factor of **1.23 dB** at the design frequency **2.20 GHz**. At the output of the amplifier insert a order **6** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

241. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
242. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
243. Results (G,NF as printscreen)
244. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
245. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

241. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
242. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
243. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
244. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
245. -1p, using the NE 71084 transistor

Bonus

241. +1p, using two different transistors for the two stages of the amplifier
242. +1p, using a different PBF filter schematic than in the example (coupled lines)
243. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
244. +1(2)p, design (complete design) of transistor bias schematics
245. +2p, broadband unconditional stability for the transistors (resistors)

Assignment nr. 50

MDC Project

1. Assignment

Design a low-noise multi-stage transistor amplifier required to provide a power gain of **22.0 dB** and a noise factor of **1.21 dB** at the design frequency **2.40 GHz**. At the output of the amplifier insert a order **5** bandpass filter with fractional bandwidth of the passband **9%** around the design frequency. The amplifier must work with a 50Ω source and 50Ω load.

The matching networks and filter must be implemented with transmission lines (stubs: L7-L8). The use of the transistors we used in lectures and laboratories examples is not permitted (NE 71084, ATF 34143)

Delivery deadline: last day of the semester (06.06.2021, 23:59:59)

The finalized design will be submitted online in the exam interface on http://rf-opto.etti.tuiasi.ro/, namely:

246. Final schematic (**all** component values will be entered individually on the site + schematic as printscreen)
247. If you use other transistors than those in the ADS 2003 libraries (eg s2p S-parameter files), the files must be submitted.
248. Results (G,NF as printscreen)
249. Handwritten calculus for the matching networks (initial values) and the filter (**!! "andrei" factor**: on paper/scanned)
250. (Optional) ADS project (*.zap) + Explanatory document if required to justify the bonus points.

2. Grading

The basic grade depends on meeting the requirements in the design data and submission of complete data.

There are bonus/penalty points that are added to/subtracted from the final grade, which **can** be transferred to the lab grade if the final project grade exceeds 10.

In establishing the basic grade (to which the bonuses are added) the coincidence (including partial) of the element values is verified, between the individual submissions of all students or with the examples presented at the lab/course. Two identical values lead to penalties on both submissions. The more the repeated value is found in individual submissions, the higher the penalty.

Penalty

246. -2p, lack of the handwritten calculus for the initial lines in the amplifier/filter (**!!"andrei" factor**)
247. -2p, using lumped elements (L,C) instead of transmission lines in the matching networks or filter
248. -1(2)p, exceeding the submission deadline, until (after) the exams session (21.06. 2021)
249. -2p, using an ATF 34143 family transistor (family: ATF 54143, ATF 35143, ATF 55143, ATF 58143 etc.)
250. -1p, using the NE 71084 transistor

Bonus

246. +1p, using two different transistors for the two stages of the amplifier
247. +1p, using a different PBF filter schematic than in the example (coupled lines)
248. +2p, passing from ideal transmission line to microstrip (substrate: alumina 15 mil)
249. +1(2)p, design (complete design) of transistor bias schematics
250. +2p, broadband unconditional stability for the transistors (resistors)